WHITE GREEN

Duro-Last® Sustainable Roofing Systems

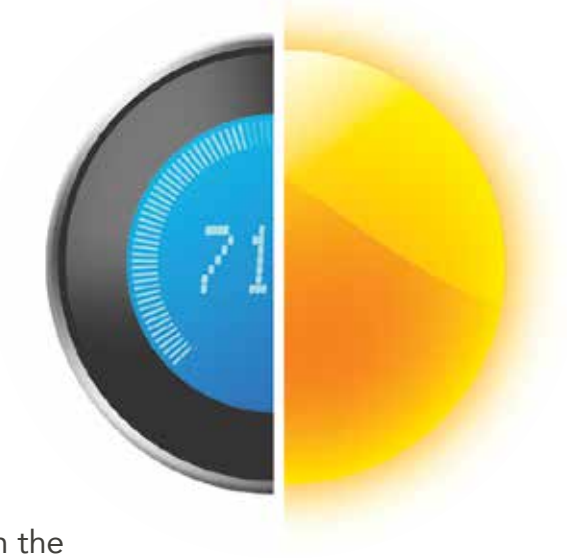
PROTECT YOUR ROOF, YOUR BOTTOM LINE AND THE ENVIRONMENT

DURO-LAST®
THE WORLD'S BEST ROOF®

A Sustainable Choice for Your Building

WHITE GREEN

Across the world, extreme weather and prolonged heat waves are setting — and breaking — records. Worse, the localized urban heat island (UHI) effect has caused the annual average temperature in a city of a million people to increase between 1.8°F and 5.4°F, according to the U.S. Environmental Protection Agency. This number can jump to as high as 22°F warmer in the evening hours.[1] Understandably, this has driven a growing demand for cooling technology.



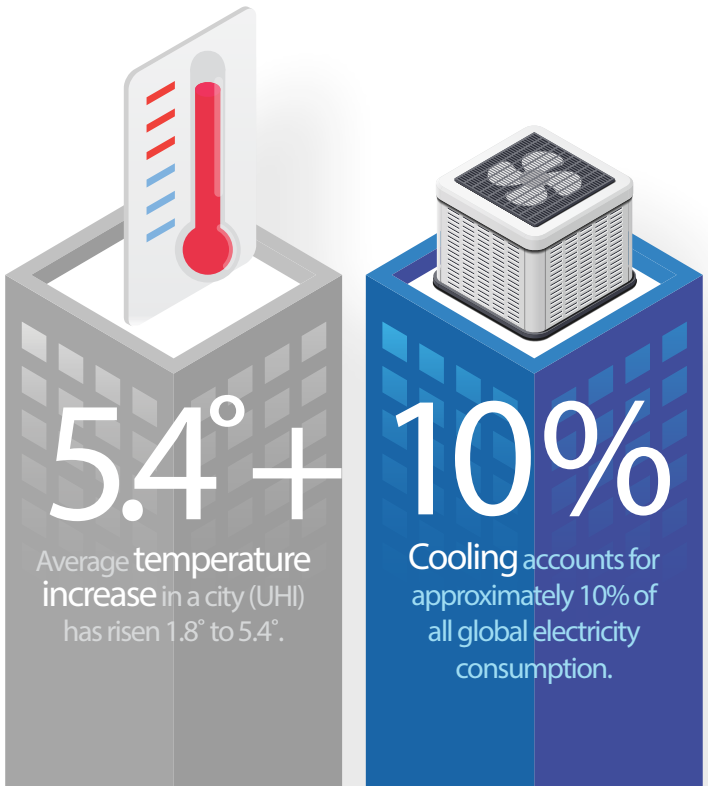
Cooling is now the fastest growing use of energy in buildings, with ACs and electric fans accounting for approximately 10% of all global electricity consumption. This is one of the most critical blind spots in the energy world today — by 2050, cooling demand could more than triple.[2] While greater access to much needed cooling services is a good thing, it places a major strain on our energy infrastructure.

A building's envelope — the parts of a building that form the primary thermal barrier between interior and exterior — plays a key role in how much energy is required to heat and cool a building.

[1] U.S. Green Building Council, "Cool Roofing for Cool Climates."
[2] International Energy Agency, "The Future of Cooling."

Of particular concern are dark-colored roofs, especially in urban environments. As Lawrence Berkeley National Laboratory researchers report in a 2013 paper, *Economic comparison of white, green, and black flat roofs in the United States:* "the sunlight that is absorbed heats the roof, which increases cooling costs in air-conditioned buildings, increases discomfort in unconditioned buildings, increases mortality during heat waves and pollutes local and regional air."

Fortunately, there are ways to successfully mitigate escalating rooftop heat, directly impacting UHI levels. By selecting Duro-Last® light-color membranes in place of dark roofing, you can significantly decrease your building's UHI impact and increase the reflectivity of sunlight, reducing heat within the building and cutting down on energy demand.



Why Choose Duro-Last?

In addition to the labor savings offered by the custom-fabricated Duro-Last membrane, our highly reflective roofing systems provide excellent energy-saving opportunities. Additionally, Duro-Last's commitment to sustainable manufacturing practices and products ensures that the environmental impact of a Duro-Last Roofing System is minimal, from production through the end of its useful life.

DURO-LAST'S FLAGSHIP BRIGHT WHITE MEMBRANE OFFERS UP TO 88% REFLECTIVITY,

enhancing the overall reflective properties of the building and driving down energy consumption – making Duro-Last the ideal cool roof option. With a total solar emittance of up to 87%, the Duro-Last membrane also releases energy and heat efficiently.

OUR MEMBRANES CAN BE INSTALLED OVER A VARIETY OF SUBSTRATES,

transforming non-reflective roofs into energy-saving reflective roofs with no disruption to operations below.

MORE THAN FOUR DECADES OF PROVEN PERFORMANCE

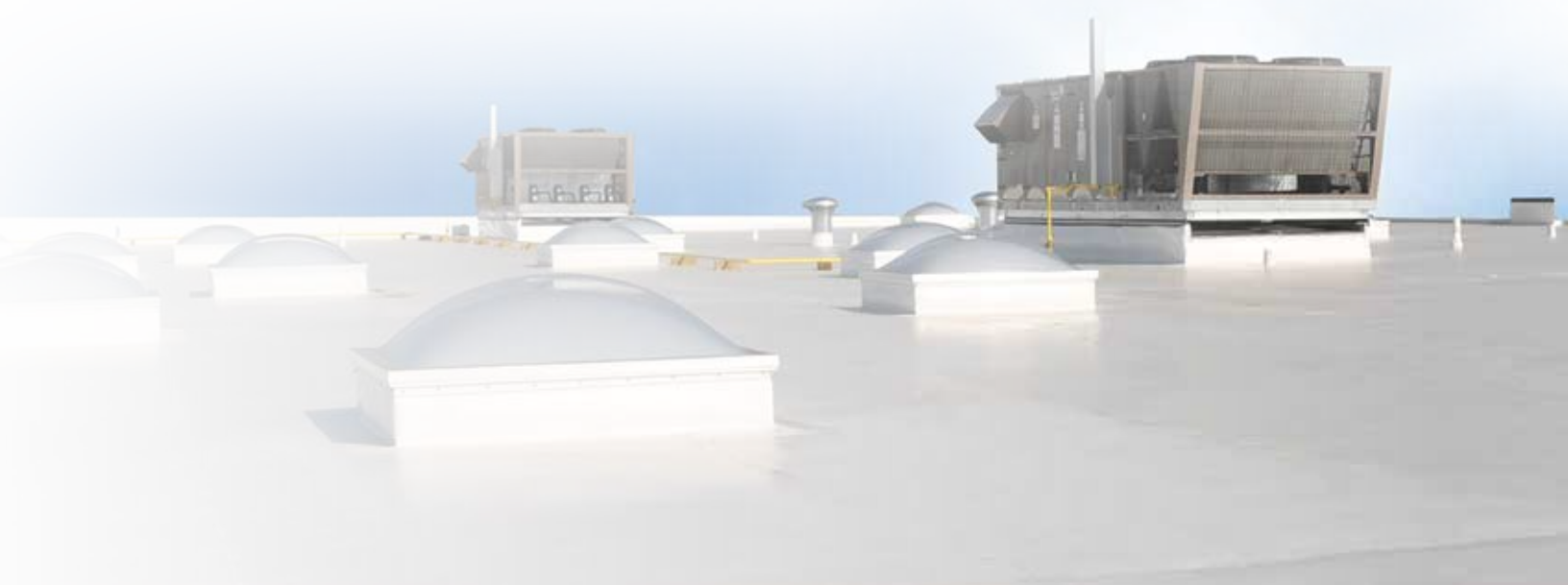
means that Duro-Last Roofing Systems are designed to provide superior protection for your building, vastly reducing the need for costly roof tear-offs and replacements.

DURO-LAST PVC ROOFING SYSTEMS ARE RECYCLABLE.

Mechanically attached Duro-Last Roofing Systems can be repurposed at the end of their useful life through our Recycle Your Roof Program, eliminating landfill waste.

HVAC UNITS HAVE A SMALLER "DEGREE DIFFERENCE"

of the air they need to cool because the ambient temperature on reflective white roofs is lower than on dark-colored roof surfaces. This decreases the cooling load, as well as unit wear and corresponding maintenance costs. In some cases, a reflective roof may enable the use of smaller, lower-cost HVAC units.



Committed to Reducing Our Environmental Impact

Duro-Last is committed to promoting sustainable roofing practices through our products, services and corporate culture. Sustainability has been a part of the Duro-Last culture for more than 20 years.

- Duro-Last was one of the first commercial roofing manufacturers to publish a product-specific PVC Environmental Product Declaration (EPD) for single-ply membranes, reporting the life-cycle environmental impact of each of our membrane products.
- During production, edge trim and scrap is kept clean and recycled back into production, eliminating virtually all manufacturing waste.
- Manufacturing utilizes a closed-loop water cycle, reducing wasteful water discharging.
- Recycle Your Roof Program recycles membranes into high-quality commercial flooring, walkway pads, rooftop pavers and concrete expansion joints.

2017

Duro-Last was recognized with the 2017 Excellence in Recycling Award by the Michigan Recycling Coalition for our commitment to recycling and sustainable materials management. The award recognizes Michigan-based organizations that show leadership and excellence in recycling and waste diversion.

Platinum Certification

- Duro-Last membrane
- Duro-Last X™ membrane

Gold Certification

- Duro-Tuff® membrane
- Duro-Fleece® membrane
- Duro-Last EV membrane
- Duro-Last EV Fleece membrane

The NSF American National Standard for Sustainable Roofing Membranes – NSF/ANSI 347 – is the leading consensus standard for evaluating and certifying sustainable attributes of single-ply roofing membranes over their entire life-cycle. Using a point system to evaluate roofing products against established prerequisite requirements, they focus on the five key areas of:

- Product design
- Product manufacturing
- Membrane durability
- Corporate governance
- Innovation

Working with Other Rooftop Applications

A growing trend in the commercial, industrial and institutional buildings market is turning "forgotten" roofs into useful space. Photovoltaic and paver systems are gaining a foothold in this area, as are vegetative roofs, due to the typically unused and unobstructed spaces that rooftops provide. The long-term watertight integrity of Duro-Last Roofing Systems, lightweight properties, custom-fabricated accessories and pre-made rack flashings make our products ideal for these environmentally conscious applications.

SOLAR ROOFING SYSTEMS

- Combat rising energy costs
- Decrease environmental footprint by utilizing renewable energy
- Provide additional incentive opportunities through local utility companies

VEGETATIVE ROOFING SYSTEMS

- Create unique escapes and produce-growing opportunities
- Provide local wildlife a safe place to nest
- Combat smog and CO_2 pollutants

Contributions to Green Building Standards

The Duro-Last single-ply roof membrane can help buildings obtain credits under the U.S. Green Building Council's LEED® (Leadership in Energy and Environmental Design) rating system, as well as GBI's (Green Building Initiative) Green Globes® certification. Both programs promote sustainable building management and construction practices.

The following tables refer to the flagship Duro-Last membrane. Additional LEED/Green Globe contribution data can be found on the Product Environmental Profiles listed on our website: Duro-Last.com/sustainability.

LEED Contributions (Version 4)

LEED BD+C: New Construction		
Category	Credit	Contribution
Sustainable Sites	SSc5: Heat Island Reduction	Initial Solar Reflective Index white membrane: 111 Three-year aged SRI: 82 Duro-Last Roofing Systems can also be installed under a vegetative roof.
Energy & Atmosphere	EAc2: Optimize energy performance	Cool roofs can help reduce heating and cooling load which reduces building energy consumption.
Materials & Resources	MRc1: Building life-cycle impact reduction	The Duro-Last life-cycle assessment (LCA) is featured in the Athena Sustainable Materials Institute's Building Impact Estimator so project teams can easily model a whole building LCA.
	MRc2: Building product disclosure & optimization – environmental product declaration	Duro-Last has a third party verified environmental product declaration, which is valued as one whole product.
	MRc3: Building product disclosure & optimization – sourcing of raw materials	Duro-Last offers a take-back program so old roofing systems can be recycled into new product. The Duro-Last product also contains at least 7% pre-consumer recycled content.

LEED Contributions (Version 4, cont.)

LEED O+M: Existing Buildings

Category	Credit	Contribution
Sustainable Sites	SSc7.2: Heat island effect – roof	Initial Solar Reflective Index white membrane: 111 Three-year aged SRI: 82 Duro-Last Roofing Systems can also be installed under a vegetative roof.
Energy & Atmosphere	EAc1: Optimize energy performance	Cool roofs can help reduce heating and cooling loads, which reduces building energy consumption.
Materials & Resources	MRc3: Sustainable purchasing – facility alterations & additions	Duro-Last offers a take-back program so old roofing systems can be recycled into new product. The Duro-Last product also contains post-industrial recycled content.
	MRc5: Solid waste – facility maintenance & renovation	Duro-Last offers a take-back program so old roofing systems can be recycled into new product to help increase the project's waste diversion rate.

Pilot Credit

Category	Credit	Contribution
Pilot Credit	Certified multi-attribute products & materials	Duro-Last is NSF/ANSI 347 certified and can achieve two points.

Green Globes Contributions (Version 2.2)

Green Globes New Construction		
Category	Credit	Contribution
3.2.2 Ecological Impacts	3.2.2.4 Heat island effect	Initial Solar Reflective Index white membrane: 111 Three-year aged SRI: 82 Duro-Last Roofing Systems can also be installed under a vegetative roof.
3.5.1 Building Core & Shell	3.5.1.1 Path A: Performance path for building core & shell	The Duro-Last life-cycle assessment (LCA) is featured in the Athena Sustainable Materials Institute's Building Impact Estimator so project teams can easily model a whole building LCA.
	3.5.1.2 Path B: Prescriptive path for building core & shell	Duro-Last is NSF/ANSI 347 certified and has a brand specific third party verified EPD to comply with this credit.
3.5.6 Resource Conservation	3.5.6.1 Minimized use of raw materials	Custom-fabricated deck sheets and accessories help reduce waste created onsite.
3.5.7 Building Envelope – Roofing/Openings	3.5.7.1 Roofing membrane assemblies and systems	All commercial Duro-Last Roofing Systems are inspected by a trained Quality Assurance Technical Representative.
	3.5.7.2 Flashings	All commercial Duro-Last flashings, provided by EXCEPTIONAL® Metals, are inspected by a trained Quality Assurance Technical Representative.
3.5.10 Envelope – Barriers	3.5.10.1 Air barriers	Duro-Last Vapor Barrier is a self-adhesive vapor membrane which works as an air barrier to stop thermal discontinuities.
	3.5.10.2 Vapor retarders	Duro-Last Vapor Barrier is an air barrier as well as a vapor retarder.

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For more information give us a call
or visit our website today.

800.248.0280

duro-last.com/sustainability

White Equals Green Booklet ORIG: 3.2012 / REV: 4.11.24 - DL090025