



ROOFING  
PERFORMANCE THAT PAYS.  
SUSTAINABILITY THAT'S SMART.

**Sarnafil**®

**BUILDING TRUST**



Roofing systems are an important consideration when evaluating sustainable construction. Sika manufactures its Sarnafil® systems with an emphasis on protecting natural resources and minimizing the impact on the environment.

The global Sika group closely follows tenets of roofing sustainability established by two respected industry organizations, the International Council for Research and Innovation in Building Construction (CIB) and the International Union of Testing and Research Laboratories (RILEM) (CIBW.83/RILEM166 RMS):

These principles include:

- Minimising the burden on the environment and being responsible stewards of the Earth's resources.
- Conserving energy, recognising the importance of savings benefits and improving the thermal efficiency of roofing systems.
- Extending the life span of roofing systems and realising the worthiness of seeking long-term performance.



## SUSTAINABILITY THAT STARTS WITH PERFORMANCE

**Sustainable practices meet the needs of the present with an eye to the needs of future generations. Before the terms “sustainable” and “green” were commonplace, Sarnafil® systems had been performing to the highest stewardship and durability standards, and are still performing after decades of service.**

◀ On the cover:  
Scotiabank Saddledome, Calgary, AB  
System: Adhered Feltback Roof using 80 mil G410 Feltback in EnergySmart White over 1/2" Gypsum Coverboard.

Building owners, designers and contractors involved in the construction of commercial buildings are increasingly aware of the need to invest in “sustainable” building practices – practices that are environmentally responsible and deliver a positive Return on Investment (ROI).

Sika produces innovative, high quality vinyl roofing and waterproofing systems that measurably reduce a building's environmental impact – and more. These energy-efficient, single-ply membranes minimize utility and maintenance costs – and deliver these savings to building owners and operators year after year, with longevity and outstanding system performance measured in decades, rather than years.

The company's reflective EnergySmart Roof and Vegetated Roofs help keep buildings and even the surrounding environment “cooler,” thereby lowering power consumption and helping to counter the “urban heat island effect” prevalent in cities across the globe.

Solar-Ready Roofing from Sika provides electrical power that helps offset the cost and carbon generation of traditional grid-supplied power.

Lessened power demands lead to improved air quality and the expenditure of fewer natural resources.

Long-lasting roofs, of course, also need to be replaced less frequently – and thus conserve natural resources while reducing the demands on landfills.

Recycling is one of the best ways to conserve the earth's resources, especially when a roof reaches the end of its useful life. Sarnafil® single-ply roofing membranes were the first to be recycled and, in recent years, more than 20 million pounds of vinyl have been reprocessed into new roofing membrane products. Sika is proud to be able to illustrate projects where the existing roof membrane has been recycled for the reroofing of the same building.

Sika® Sarnafil® systems are proven performers with a 50 year history. Sarnafil® membranes continue to perform after decades of use in a wide range of climates. More than 15 billion square feet of Sika® Sarnafil® membrane is protecting schools, libraries, hospitals, commercial and government buildings,

and other high-value institutions around the world. Superior performance with minimal environmental impact – these characteristics are documented via numerous studies and reports from independent institutions, as noted on the following pages.

Discover how Sika is redefining sustainability with environmentally sensitive products that deliver higher ROI while helping you achieve your sustainability goals – energy efficiency, environmentally preferable products, greenhouse gas reduction and waste minimization.

**Performance that Pays. Sustainability that's Smart. Sika® Sarnafil® roofing systems.**

# REACH HIGHER ROI





▲ Le Foyer Rousselot, a long term care facility in Montreal, Quebec that is affiliated with the Lucille-Teasdale Health Centre, chose to cover its unique roof with a combination of G410-15 and G410-20 Sarnafil® EnergySmart Roof membranes.



▲ A reflective Sika roofing membrane was selected to cover the 1.3 million square foot Target Distribution Centre in Milton, Ontario

## ENERGY EFFICIENCY



### GET ENERGY SMART

An EnergySmart Roof from Sika can reduce your roof temperature by up to 21°C (70°F) and air conditioning energy consumption by up to 20% or more.

**Preventing solar radiation from elevating a building's internal temperature is an important strategy in reducing its cooling energy consumption.**

Buildings use more than 70% of our nation's electricity, with much of this total expended for cooling.<sup>1</sup> Dark coloured roof surfaces can be up to 21°C (70°F) hotter in the sun than reflective, light coloured surfaces. This variation can have a tremendous impact on building heat gain. Even in colder climates, buildings can benefit from a "cool" roof.

According to the U.S. DOE, replacing dark coloured roofs with light coloured, reflective roofs could result in national energy savings of about \$750 million per year.

<sup>1</sup>2007 Buildings Energy Data Book, U.S. DOE

Sika's EnergySmart Roof has a highly reflective, lacquer-coated surface. This system reduces the amount of energy required to maintain comfort in an air-conditioned building by decreasing heat flow through the building envelope. The EnergySmart Roof membrane exceeds the cool roof requirements of LEED® Canada, Canada Green Building Council, California's Building Energy Code (Title 24) and Green Globes™.

#### "Cool" Roofs in Demand

Reflective roofing technologies are increasingly being included in federal, provincial and local energy codes. These roofs are considered "cool" roofs. The Title 24 building energy code in California requires such roofs for low-slope buildings when the owner or developer is using the program's prescriptive envelope component approach.

#### Reflectivity Confirmed

Solar reflectance and thermal emissivity of roof surfaces are combined to calculate the Solar Reflective Index (SRI).

In research conducted by Lawrence Berkeley National Laboratory (LBNL), Sika's EnergySmart Roof system reflected more than 80% of the sun's rays and scored an impressive SRI of 104. This same research showed that dark coloured EPDM roof membranes and dark coloured Built-Up Roofing reflected only about 5% of the sun's rays and had SRI scores close to 0.<sup>2</sup>

<sup>2</sup> Lawrence Berkeley National Laboratory, Cool Roofing Materials Database

<sup>3</sup> "Urban Heat Islands and the Roofing Industry," RSI magazine, 1998

<sup>4</sup> S. Konapacki and H. Akbari, 2001, Lawrence Berkeley National Laboratories, Berkeley CA (Report LBNL47149)

Studies have shown that the "Urban Heat Island effect" costs the United States in excess of \$2 billion each year and is responsible for 5 to 10 percent of the peak electrical demand across the country.<sup>3</sup>

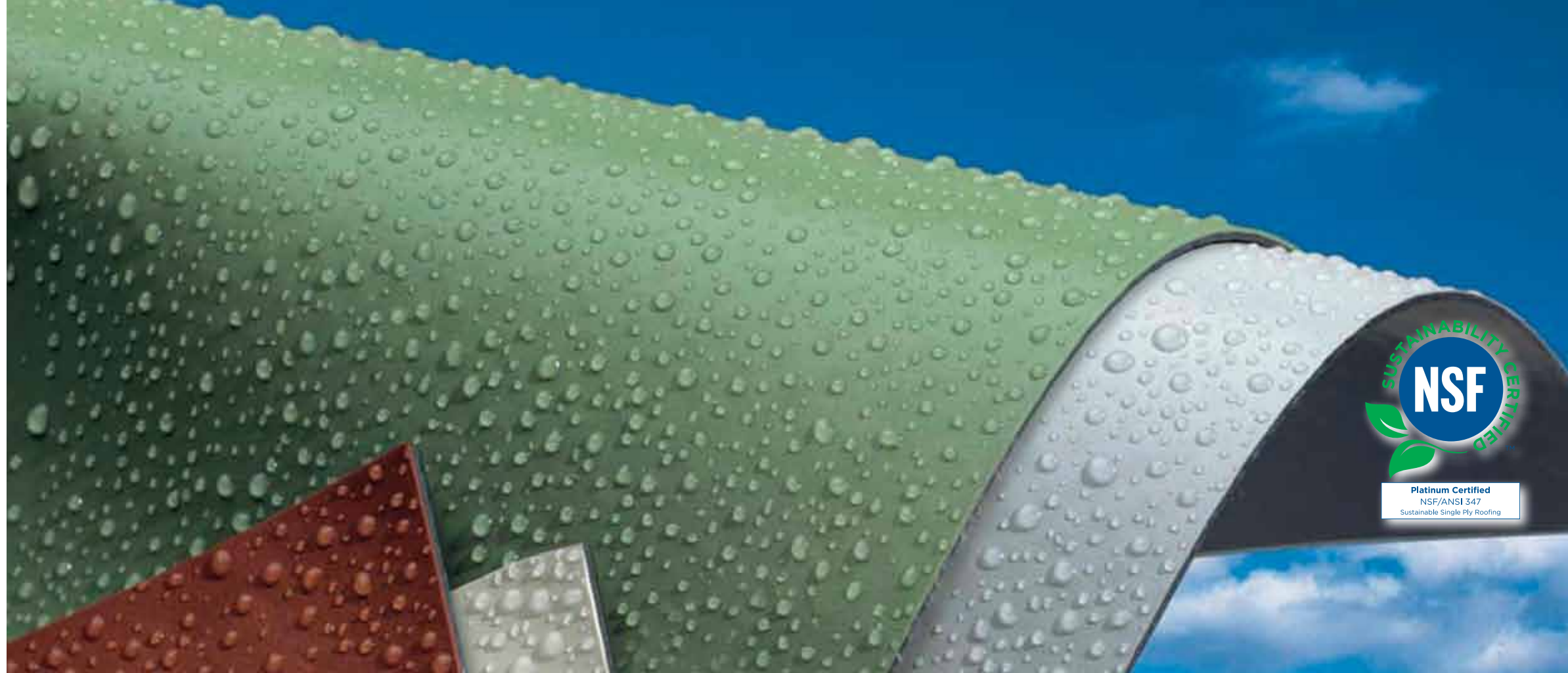
The installation of reflective roofing systems is a practical course of action that will help to mitigate systemic increases in urban air temperature and improve air quality. Sika® Sarnafil® roofing systems do just that.

#### Real World Comparison

In an LBNL study commissioned by the U.S. DOE and the EPA<sup>4</sup>, researchers first compared energy consumption

in a 100 000 square feet Texas facility over a two-year period – with a black rubber EPDM roof in use first and then a Sika® Sarnafil® EnergySmart Roof in place for the following 12 months. The EnergySmart Roof reduced peak summertime air-conditioning demand by 14% and resulted in an estimated saving of \$7,200 (7.2 cents per sq. ft. per year, based on 2001 pricing).

**Sika offers a variety of energy efficient Sarnafil® roofing solutions - from the reflective EnergySmart Roof to Vegetated Roofs and Solar-Ready Roofing. These Sika® Sarnafil® systems reduce electricity use over time, resulting in a higher ROI for the building owner.**



## Vinyl in Perspective

Vinyl receives consistent praise from roofing consultants, architects, contractors and specifiers for its performance as a low-cost, durable, and easy-to-maintain material. Though every building material has an effect on the environment, life-cycle studies that measure energy and environmental impact – from manufacturing through processing, use, maintenance and end-of-life disposal – conclude that vinyl offers proven benefits that outperform alternative roofing materials.

Vinyl roofing products meet a demanding range of safety standards established by numerous public and regulatory agencies. Sika takes a forward-thinking approach to sustainability that considers the impact on environment and safety throughout the product life cycle.

## ENVIRONMENTALLY PREFERABLE PRODUCTS



### MEETING YOUR SUSTAINABILITY GOALS

Sika® Sarnafil® roofing systems can help you to achieve LEED® Canada and Green Globes certification.

The EPA defines “environmentally preferable” products and services according to their health and environmental impact across a wide variety of factors, including raw material acquisition, manufacturing, reuse, operation and maintenance.

A comparative Life-Cycle Analysis (LCA) of commonly used low-slope roofing products conducted by Carbotech, a leading European consulting firm, ranked Sika® Sarnafil® vinyl roofing membranes highest in eco-efficiency, making the company the leading choice for environmentally preferable roofing solutions.<sup>5</sup>

The Carbotech study reported on the energy impact of system production and operation, and also included system impact on the environment – from raw materials to end-of-life.

Sika® Sarnafil® roof systems last for decades, with durability and longevity the hallmarks of the company’s thermoplastic membranes. Seams are hot-air welded and membranes require virtually no maintenance, helping to keep annual operational costs to a minimum. Average maintenance costs reported by Sika® Sarnafil® roof system owners are well below the industry average.

The feedstock of vinyl resin used to produce Sika® Sarnafil® membranes is 53% salt and represents the least amount of petroleum-based raw materials found in any common low-slope roofing product – typically less than half that of other roofing systems.

A reliable, high quality roof simply lasts longer and has lower maintenance expenses over its lifetime.

▲ With five decades of proven performance history, Sika’s durable thermoplastic roofing membranes are the products of choice by architects, specifiers and building owners who want the peace of mind that comes with buying from the performance leader.

The LCA ‘assessment’ is a key measure of environmental performance that should be used to ensure the best value in a long-term roofing investment.

#### Designed to Last

Research conducted by Sika and verified through independent sample testing conducted by the National Research Council of Canada (NRCC) revealed that the oldest Sika® Sarnafil® roofs in North America continue to perform decades after installation.<sup>6</sup>

The British Board of Agrément (BBA) provides authoritative information on the performance of building products. The BBA conducted an independent analysis of Sarnafil® vinyl roof membranes based on the “real world” performance of the roofing systems. The BBA issued

a certificate indicating that “Available evidence indicates that the Sarnafil® membrane will have a service life in excess of 35 years” and “in excess of 40 years, with periodic maintenance.”<sup>7</sup>

Testing by NSF International to NSF/ANSI Standard 347 -Sustainability Assessment for Single -Ply Roofing Membranes has resulted in Sarnafil® materials being not only the first to be listed but also achieving the highest level with Platinum Certification.<sup>8</sup>

#### “Environmentally Friendly” Choices

The “Vegetated Roof” is one of today’s most recognizable symbols of sustainable building practices. Sarnafil® systems have been used in waterproofing vegetated roofs and other landscaped areas around the world for more than 35 years.

A Sika® Sarnafil® Vegetated Roof System protects structures from the effects of water infiltration while hosting healthy, sustainable and regenerative roof landscapes.

The rooftop is also an ideal setting for solar power generation. Because of its longevity, a Sika® Sarnafil® roof is an outstanding platform for all types of solar panels. The investment in solar power and its long life-cycle demands a long-lasting roofing system like Sika® Sarnafil®. Solar power helps building owners save money on electricity, especially during peak demand periods, and often enables them to obtain credit for feeding excess solar power into the local electrical grid.

<sup>5</sup>“Ecological and Economical Balance Assessment of US Flat Roof Systems”, Dr. F. Dinkel and C. Stettler, Carbotech AG, Eulterstrasse, Basel, Switzerland, July 2005.

<sup>6</sup>S.P. Graveline, H.R. Beer, R.M. Paroli, A.H. Delgado, “Field Investigation and Laboratory Testing of Exposed Poly (Vinyl Chloride) Roof System”, Proceedings of the RCI 20th Annual International Convention and Trade Show, Miami Florida 2005.

<sup>7</sup>British Board of Agrément Assessment Report No. 08/4532, 2008.

<sup>8</sup>NSF International Listing Report No. C0096983 2013.



## LEED® Canada and Green Globes

The Canadian and U.S. Green Building Council's LEED program and the Green Building Initiative's Green Globes program provide guidance to building owners and designers seeking to follow sustainable building practices. These programs have established point systems leading to certification – with categories that include energy, resources, emissions and others. Sika® Sarnafil® systems can significantly contribute points towards these programs.

Sika has been actively involved with numerous LEED® Canada and Green Globes facilities in recent years and has the knowledge and the experience necessary to assist building owners and designers seeking certification from these initiatives.



## GREENHOUSE GAS REDUCTION



### SPECIFY YOUR CARBON FOOTPRINT

Replacing a 940 m<sup>2</sup> (10 000 ft<sup>2</sup>) dark-coloured roof with a highly reflective EnergySmart Roof can reduce CO<sub>2</sub> emissions by 100 000 metric kg (100 metric tons).

**Buildings in Canada account for 12% of Greenhouse gas emissions which represents 2% globally.**

Replacing dark coloured roofs with reflective, light coloured roofs on 80% of commercial, air-conditioned buildings could reduce carbon dioxide emissions by 6230 kg (6.23 t) per year. This reduction is enough to offset the CO<sub>2</sub> emissions of 1.2 million automobiles.<sup>9</sup> On average, a Sika® Sarnafil® vinyl membrane in North America is carbon neutral after 1.7 years.

<sup>9</sup>R. Levinson and H. Akbari, Heat Island Group, Lawrence Berkeley National Laboratory, "Potential benefits of cool roofs on commercial buildings: conserving energy, saving money, and reducing emission of greenhouse gases and air pollutants."

### Air Quality Relief

Reflective roofing surfaces also positively impact air quality. In most geographic areas, an air temperature increase translates into an air quality decrease.

Higher temperatures mean a greater need for air conditioning and increased energy use. As power plants burn more fossil fuels, they generate additional carbon emissions.

Smog results from the photochemical reactions of pollutants in the air, and these reactions are more likely to intensify at higher temperatures.

In some cities, the incidence of smog increases 3% for every one degree the temperature rises above 21°C (70°F).

### The Air We Breathe

EnergySmart Roofs reflect the sun's rays, helping to alleviate oppressive urban air temperatures and slow the reaction of smog-forming pollutants. Vegetated roofs filter the air and improve air quality, absorbing and converting carbon dioxide to oxygen.



Highly reflective roofs help to lower temperatures and thus minimize this condition. Reflective roofs have been identified by many in the scientific and environmental communities as a practical course of action to help improve air quality.

**Sika's long-lasting, energy-efficient roofing systems reduce building energy consumption, minimize smog formation, consume fewer raw materials, and generate less waste when compared to alternative roofing systems.**



### Responsible Care® and ISO 14001

Sika has been certified as compliant with strict management standards established by two leading independent organizations relating to environment, health and safety, and security.

The Sarnafil® production facility is compliant with Responsible Care, a technical standard created by the American Chemistry Council, and Sika Canada's head office in Pointe-Claire, Quebec is ISO 14001 accredited, an environmental management standard developed by the International Organization for Standardization.

These two programs are recognized worldwide and designed to help companies maintain a safe and secure environment for employees, assure responsible environmental stewardship, and promote harmony in the community.

## WASTE MINIMIZATION



### CONVERTING WASTE INTO PERFORMANCE

Sika has diverted more than 90 million kg (20 million lb) of vinyl membrane from the landfill, recycling it back into roofing membrane products.

**Waste reduction starts with durable products that stand the test of time. Long-lasting roofs need to be removed and replaced less frequently, providing lower life cycle costs and reducing the amount of waste destined for landfills.**

Sika® Sarnafil® membranes continue to perform after decades of use in a wide range of climates. This history of proven performance assures customers of one of the longest-lasting roofing systems available.

▲ Sika was among the first companies to introduce a recycling program for commercial roofing membranes, and has successfully reprocessed millions upon millions of kilograms/pounds of vinyl membrane into raw material suitable for use in the manufacture of new membrane products.

The company reduces waste at every step in the product life cycle. It gathers excess vinyl raw materials generated during manufacturing operations and converts virtually 100% back into new roofing and waterproofing membranes. The company also recycles returned vinyl membrane "trimmings" contractors generate when installing new roofs and converts these materials into new products.

When a roof must be replaced, Sika's post-consumer Roof Recycling Program recycles millions of square feet of used vinyl membrane yearly, further reducing the burden on landfills. These older vinyl roofs are recycled back into new

roofing membrane products, sometimes appearing back on the buildings from which they have been taken for reprocessing.

Sika has invested in large-scale reprocessing equipment and developed a simplified logistics plan to streamline and enhance the process for participating contractors.

The recycling program relies on proven technologies and conserves valuable natural resources.

**Sika was honoured in 2009 by the Massachusetts Office of Energy and Environmental Affairs (EEA) for its roof recycling program.**

**20**  
**MILLION**  
**POUNDS**  
**RECYCLED**  
**AND COUNTING!**

# SIKA SOLUTIONS FROM ROOF TO FOUNDATIONS

## Roofing Systems



**Sarnafil®**  
**Sikaplan®**  
**Sikalastic®**

## Concrete Production



**Sika® ViscoCrete®**  
**Sika® Retarder®**  
**Sika® AER<sup>CA</sup>**

## Joint Sealing



**Sikaflex®**  
**Sikasil®**  
**Sikadur® Combiflex**

## Grouting and Anchoring



**SikaGrout®**  
**Sikadur®**  
**Sika AnchorFix®**

## Concrete Repair & Protection



**Sika® MonoTop®**  
**SikaTop®, SikaRepair®**  
**Sikagard®**

## Structural Strengthening



**Sikadur®, Sika® CarboDur®**  
**SikaWrap®**  
**Sika® CarboShear**

## Floor & Wall Systems



**Sikafloor®**  
**SikaBond®**  
**Sikagard® Duroplast**

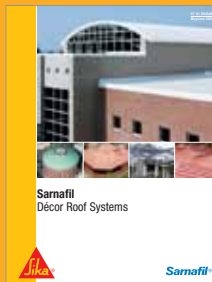
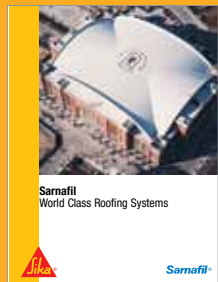
## Waterproofing Systems



**SikaProof®, SikaFuko®**  
**Sika® Greenstreak®**  
**SikaSwell®, SikaFix®**

Sika Canada Inc., a member of the Sika Group, is a leader in the field of speciality chemicals, for construction and manufacturing industries. Our product lines feature high quality roofing systems, concrete admixtures, mortars and resins, sealants and adhesives, structural strengthening components, industrial and decorative flooring, as well as protective coatings and waterproofing systems. Our expertise is borne out of a global presence and served by strong, local support. Sika has earned the trust of our industries for over 100 years, by delivering the highest standards of commitment and partnership.

## Also Available:



The information, and in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions, within their shelf life. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users should always refer to the most recent issue of the Product Data Sheet for the product concerned, copies of which will be supplied on request or can be accessed in the Internet under [www.sika.ca](http://www.sika.ca).

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Pointe-Claire: ISO 14001 certified EMS

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