



ROOFING
ENVIRONMENTAL PRODUCT
DECLARATION - CRADLE-TO-GATE
SIKAPLAN ADHERED



ASTM INTERNATIONAL

BUILDING TRUST



GENERAL INFORMATION

COMPANY

Sika Corporation – Roofing

PRODUCT TYPE

Single Ply Roofing Membrane

PRODUCT

Sikaplan Adhered roofing membrane, with a finished thickness of 60 mils.

MANUFACTURING SITE

Canton, MA 02021

EPD SCOPE

- Cradle-to-Gate

EPD LIMITATIONS

- EPDs from different programs (using different PCR) may not be comparable
- Declarations based on the ASTM SPRM PCR [1] are not comparative assertions; that is, no claim of environmental superiority may be inferred or implied for cradle to gate declarations.

DECLARED UNIT

1 m² manufactured, Sikaplan Adhered

STANDARDS

The declared Sikaplan Adhered roofing membrane thickness (60 mils) meets the following standards and requirements

- ASTM D4434
- Title 24 Compliant*
- Cool Roof Rating Council® Listed*
- FM Approval
- Underwriters Laboratory Inc.
- Underwriters Laboratories of Canada

ORGANIZATION

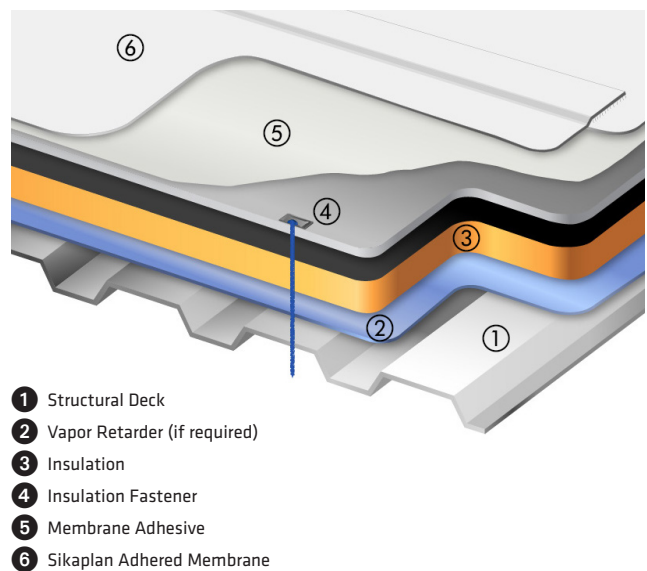
Sika Corporation, based in Lyndhurst, NJ, is a leading manufacturer of products and systems for the construction and motor vehicle markets.

Sika Corporation's roofing division has more than 50 years of experience manufacturing high quality, thermoplastic (PVC), single-ply roofing and waterproofing systems for the non-residential market.

PRODUCT DESCRIPTION AND USE

With a track record of performance, Sikaplan roofing membranes are the products of choice for architects, specifiers and building owners who want the peace of mind that comes with buying from the performance leader.

Sikaplan Adhered roof membrane is a thermoplastic PVC membrane used in adhered systems. Sikaplan Adhered is fiberglass reinforced, offering exceptional dimensional stability and a low coefficient of thermal expansion suitable for adhering the membrane to the roof substrate. A unique lacquer coating is applied to the top surface of the membrane which helps to reduce soiling.



* white only

PRODUCT SPECIFICATIONS

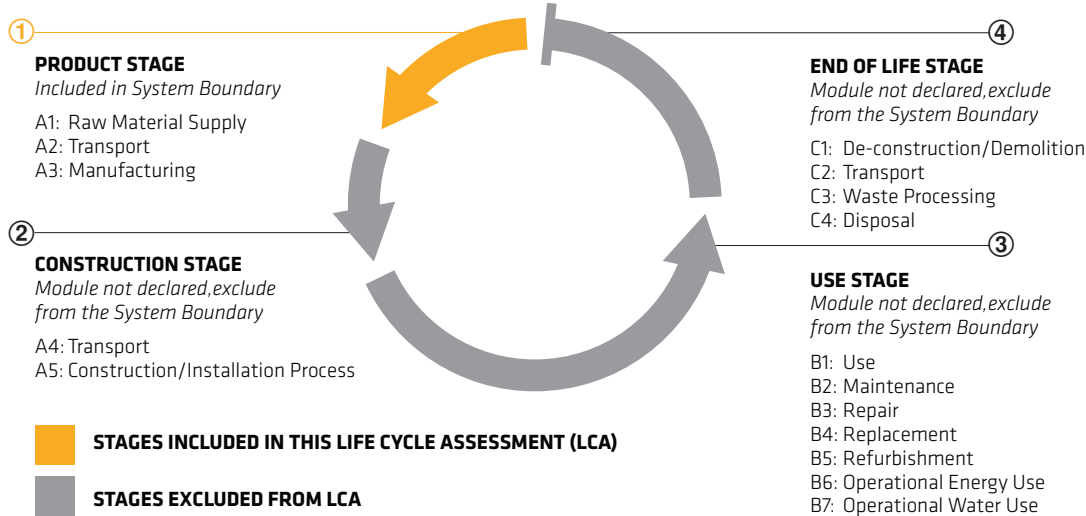
| TECHNICAL DATA | UNITS | ASTM TEST METHOD | ASTM D4434 TYPE III REQUIREMENT | VALUE/TEST RESULTS |
|---|----------------------|------------------|---------------------------------|---------------------------------------|
| | | | | 60 MILS (NOMINAL) |
| Weight | [kg/m ²] | – | – | 1.72 |
| Total Recycled Content (both pre- and post-consumer) ³ | [%] | – | – | 10 ³ |
| Reinforcing Material | – | – | – | Fiberglass mat |
| Overall Thickness | [mil] | D751 | 45 | 60 (nominal) |
| Reflectivity (white) | [%] | ASTM C1549 | – | 0.85 ⁴ - 0.66 ⁵ |
| Emissivity (white) | [%] | ASTM C1371 | – | 0.89 ⁴ - Pending |
| Solar reflective index (white) | – | – | – | 107 ⁴ - Pending |
| Breaking Strength (M.D.), min. | [lbf/in]. (KN/m) | D751 | 55 (245) | 64 (285) |
| Elongation at Break, min | – | D751 | – | – |
| Machine Direction | [%] | | 250 | 250 |
| Cross Direction | [%] | | 220 | 220 |
| Seam Strength, min., (% of original) ⁶ | [%] | D751 | 75 | Pass |
| Retention of Properties After Heat Aging | [%] | D3045 | – | – |
| Tensile Strength, min., (% of original) | [%] | D751 | 90 | Pass |
| Elongation, min., (% of original) | [%] | D751 | 90 | Pass |
| Tearing Strength (C.D.), min | [lbf] (N) | D1004 | 10 (45) | 15 (67) |
| Low Temperature Bend, –40 °F (–40 °C) | – | D2136 | Pass | Pass |
| Accelerated Weathering Test (Fluorescent Light, UV exposure) | – | G154 | 5,000 hours | 10,000 hours |
| Cracking (7x magnification) | | None | None | None |
| Discoloration (by observation) | | Negligible | Negligible | Negligible |
| Crazing (7x magnification) | | None | None | None |
| Linear Dimensional Change (C.D.), % | | D1204 | 0.1% max. | –0.02 |
| Weight Change After Immersion in Water, | % | D570 | ±3.0% max. | 2.4 |
| Static Puncture Resistance | Lbf (N) | D5602 | 33 (147) | Pass |
| Dynamic Puncture Resistance | ft-lbf (J) | D5635 | 7.3 (10) | Pass |

³ Pre-consumer material: roofing membrane trimmings from Sika's manufacturing process and market supplied post-industrial PVC scrap material. Post-consumer material: post-consumer Sika Sikaplan scrap material and old roofs (10% minimum content)

⁴ New Membrane

⁵ 3 year aged. Derived using the California Title 24 calculation method for aged solar reflectance per Section 110.8(i)2. of the 2013 Building Energy Efficiency Standard, page 102.

Life Cycle Stages



SYSTEM BOUNDARY

| | INCLUDED | EXCLUDED |
|--------------|---|---|
| A1-A3 | <ul style="list-style-type: none"> Extraction and processing of raw materials, including fuels used in product manufacturing; Transportation of raw materials including empty backhauls; Manufacturing of the product; Packaging of product ready for shipment; Transportation from manufacturing site to recycling/reuse for pre-consumer wastes and unutilized by-products from manufacturing, including empty backhauls; and Recycling/reuse of pre-consumer wastes and by-products of production. | Capital goods & infrastructure, production equipment, delivery vehicles, lab equipment personnel-related activities and energy and water use related to company management and sales have been excluded in the scope of the study |

MATERIAL CONTENT DECLARATION

The material average percentage by weight for 1m² for the Sikaplan Adhered 60 mils is provided.

| MATERIAL AVERAGE PERCENTAGE BY WEIGHT FOR 1 M ² : SIKAPLAN ADHERED 60 [MILS] | | PACKAGING MATERIAL | DECLARED PRODUCT [MILS] |
|---|---------------------|----------------------------|-------------------------|
| Raw Material Input | Total Weight by [%] | | 60 |
| Lacquer | 0.1 | Cardboard Core [kg] | 0.05 |
| PVC Resin new material | 43.0 | Wooden Pellet [kg] | 0.13 |
| PVC Resin recycled content | 13.6 | Shrink Wrap [kg] | 0.0002 |
| Plasticizer | 27.9 | | |
| Processing aid | 0.2 | | |
| Stabilizer | 2.1 | | |
| Fire retardants | 7.5 | | |
| Pigment | 3.1 | Total [kg/m ²] | 0.18 |
| Fiberglass mat | 2.5 | | |
| Total weight (Input) | 100 | | |

LIFE CYCLE IMPACTS



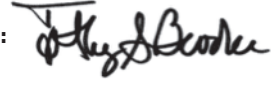
| RESULTS SIKAPLAN ADHERED | DECLARED PRODUCT |
|---|------------------|
| CATEGORY INDICATOR | 60 MILS |
| Global Warming Air, incl. biogenic carbon [kg CO ₂ -eq.] | 4.71 |
| Acidification potential [kg SO ₂ -Equiv.] | 3.72E-02 |
| Eutrophication potential [kg N-Equiv.] | 8.04E-04 |
| Smog creation potential [kg O ₃ -Equiv.] | 0.279 |
| Ozone Depletion Potential [kg ethene-eq.] | 6.254E-08 |
| TOTAL PRIMARY ENERGY CONSUMPTION | |
| Nonrenewable fossil [MJ] | 118.11 |
| Nonrenewable nuclear [MJ] | 5.98 |
| Renewable (solar, wind, hydropower, geothermal) [MJ] | 1.54 |
| Renewable (biomass) [MJ] | 0.02 |
| MATERIAL RESOURCES CONSUMPTION | |
| Nonrenewable materials [kg] | 1.44 |
| Renewable materials [kg] | 0.18 |
| Fresh water [l] | 15.22 |
| WASTE GENERATED | |
| Total [kg] | 0.21 |

Additional Environmental Information

- The Sikaplan EnergySmart® membrane has a highly reflective, lacquer-coated surface that can reduce cooling and overall energy consumption in conditioned buildings. Sikaplan roof membranes meet the cool roof requirements of California's Building Energy Code (Title 24), LEED® and Green Globes.™
- Sika Roofing's Roof Recycling Program has diverted more than 45 million pounds of pre-consumer and post-consumer vinyl membrane from landfill, recycling it back into roofing and waterproofing membrane products.
- Sikaplan 5' and 10' membranes have been validated by UL Environment to contain an average of 10% recycled content.
- Sika roofing has been certified as compliant with strict environment, health and safety, and security standards established by the Responsible Care and ISO 14001: 2004.
- Sikaplan roof membranes help building owners achieve LEED and Green Globes certification

EPD VERIFICATION

This EPD was independently verified by ASTM in accordance with ISO 14025:

| | | | | |
|---|--|---|---|---|
| Internal <input type="checkbox"/> | External <input checked="" type="checkbox"/> | Jamie Meil, Research Principal Athena Sustainable Materials Institute 100-119 Ross Avenue Ottawa, Ontario, Canada K1Y0N6 |  Athena Sustainable Materials Institute | Signed:  |
| Program Operator | | Timothy Brooke ASTM International 100 Bar Harbor Drive West Conshohocken, PA 19428 tbrooke@astm.org |  ASTM INTERNATIONAL | Signed:  |
| Declaration Holder | | Sika Corporation | | |
| Product group | | Date of Issue | Period of Validity | Declaration Number |
| | | 03/01/2016 | 5 years | EPD030 |

| | | |
|--|---|---|
| DECLARATION TYPE A "Cradle-to-Gate" EPD for the selected thickness of the Sikaplan Adhered roofing membrane (60 mils). The modules included are A1 to A3. The declaration is intended for use in Business to Business (B-B) communication. | PRODUCT APPLICABILITY AND CHARACTERISTICS The declared Sikaplan Adhered roofing membrane thickness (60 mils) is designed for low-slope and steep slope roofing applications. The membrane includes an internal fiberglass mat reinforcement to provide the dimensional stability required for adhered roof systems. | CONTENT OF THE DECLARATION This declaration follows Section 11, Content of the EPD, ASTM International Product Category Rules for Preparing an Environmental Product Declaration for Single-Ply Roofing Membranes, November 2013. |
|--|---|---|

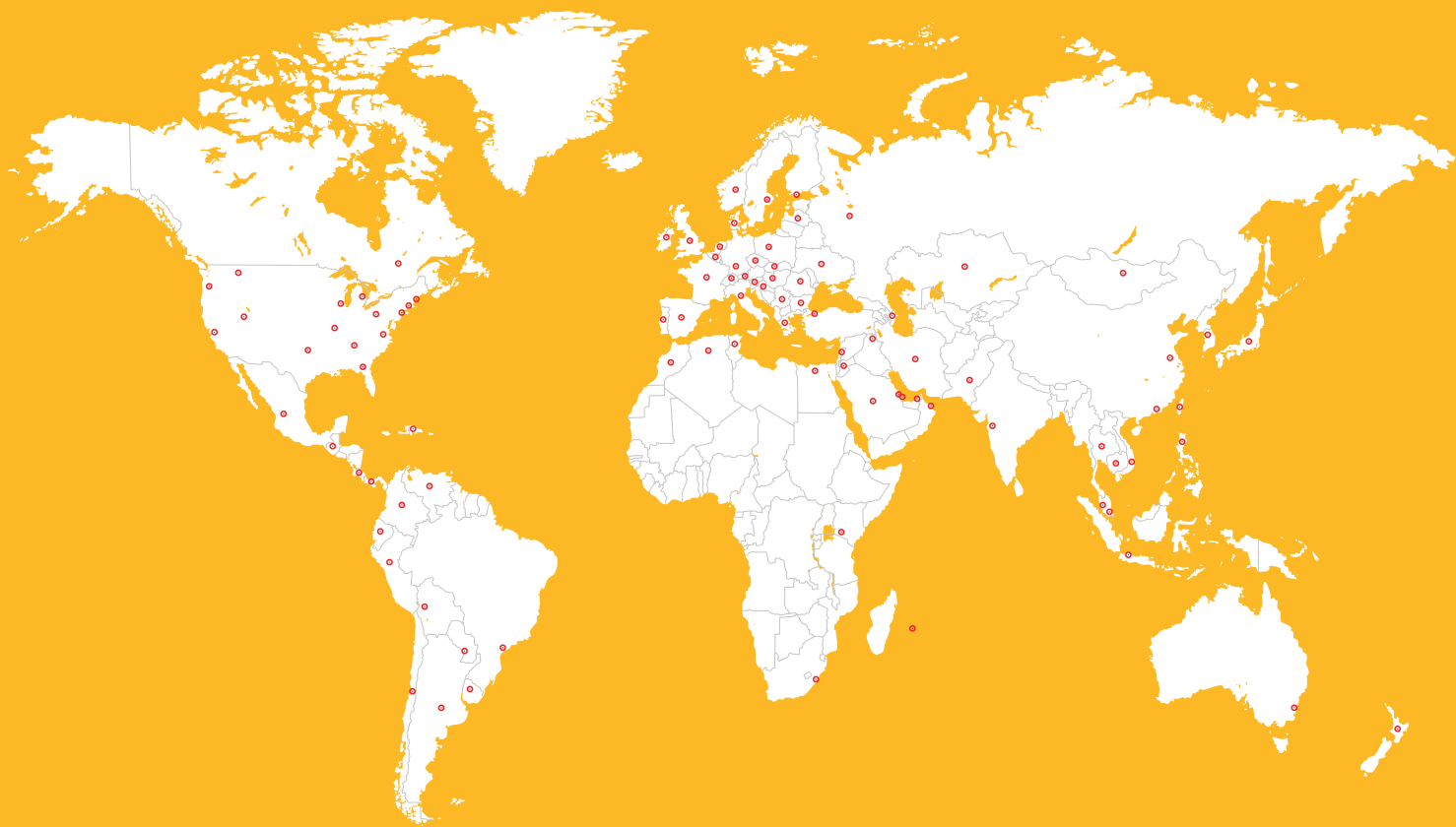
EPD PROJECT REPORT INFORMATION

| | |
|---------------------------------|---|
| EPD PROJECT REPORT | A "Cradle-to-Gate" Life Cycle Assessment for the thickness of Sikeplan Adhered (60 mils), 01/31/2016 |
| LCA AND EPD PREPARED BY: | Corporate Product Sustainability Sika Services AG Tüffenwies 16 8050 Zurich Switzerland product.sustainability@ch.sika.com |

PCR INFORMATION

| | |
|-------------------------------------|--|
| PROGRAM OPERATOR | ASTM International |
| REFERENCE PCR | ASTM International, Product Category Rules for Preparing an Environmental Product Declaration for Single Ply Roofing Membranes |
| DATE OF ISSUE | November 2013 |
| PCR REVIEW WAS CONDUCTED BY: | Francois Charron-Doucet Quantis International Email : francois.charron@quantis-intl.com |

GLOBAL BUT LOCAL PARTNERSHIP



WHO WE ARE

Sika AG, located in Baar, Switzerland, is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing and protecting in the building sector and the motor vehicle industry.

The corporation has subsidiaries in 84 countries, employs 16,000 people worldwide, and has more than 160 manufacturing facilities around the globe.

Our most current General Sales Conditions shall apply.
Please consult the Product Data Sheet prior to any use and processing.
ISO 14001: 2004-Compliant



ENERGY STAR® for roofing products is only valid in the United States.
ENERGY STAR® is a trademark of the U.S. EPA.
LEED® is a trademark of the U.S. Green Building Council.
Green Globes® is a trademark of the Green Building Initiative.

SIKA CORPORATION—ROOFING

100 Dan Road
Canton, MA 02021
Tel: 800-451-2504
Fax: 781-828-5365
usa.sarnafil.sika.com
webmaster.sarnafil@us.sika.com

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