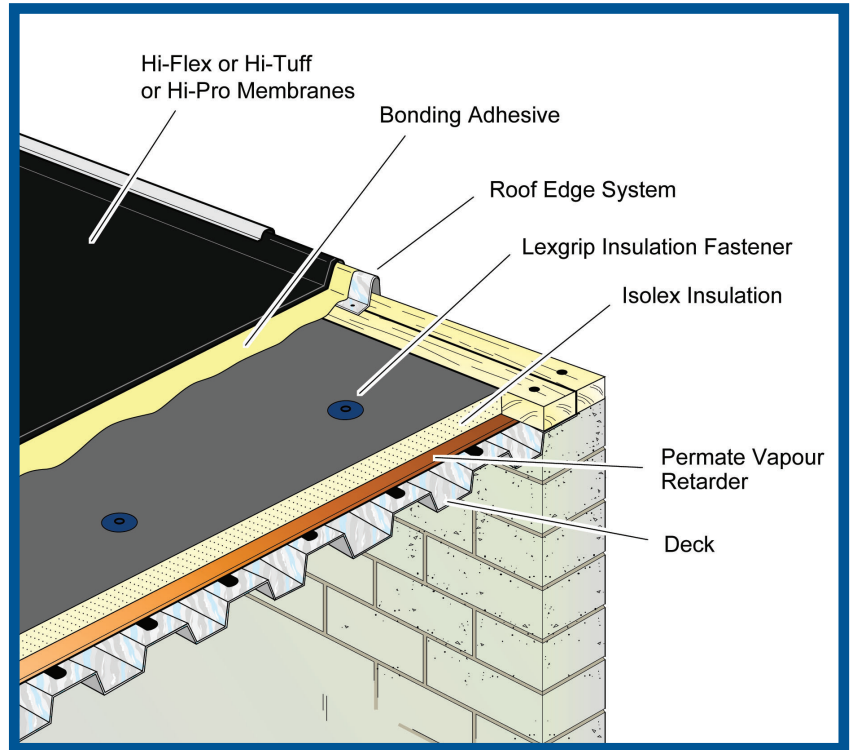




# Adhesive Adhered Roof Systems

## DESIGN GUIDE

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Adhesive Adhered Roof System Application

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## SYSTEM DESCRIPTION

Lexcan's Adhesive Adhered Roof Systems feature a Lexcan single ply roofing membrane fully bonded with a membrane specific adhesive to a structural substrate or insulation. Sheet seaming and special flashing accessories complete the roofing application, ensuring total membrane integrity from the roof edge to the drains.

Lexcan has a wide variety of membranes (listed below) suitable for use in the adhesive adhered system. Separate product data bulletins are available to compare the performance and features of each membrane. This bulletin focuses on the features, advantages and design criteria of adhesive adhered roof systems, independent of which membrane is used.

## USE

The adhesive adhered system is the most versatile of the Lexcan roofing systems. Able to be used on any sloped surface, it is ideal for barrel, saw-tooth or irregularly shaped roofs where direction changes and corners prevail. It also offers a considerable advantage for roofs with limited load-bearing capacity since the insulation, adhesive and membrane usually weigh less than 5 kg/m<sup>2</sup> (1 lb/ ft<sup>2</sup>).

Adhesive adhered systems may be used in thermal upgrades or re-roofing applications. In this type of application, the membrane is normally adhered to a recovery board or new layer of insulation installed over top of the old roof.

## FEATURES & ADVANTAGES

- **Long-Term Performance** - Single ply roofs provide superior ozone, UV and thermal resistance to out last comparable bituminous based systems.
- **Puncture & Damage Resistant** - Adhered single ply roofs offer outstanding resistance to puncture and physical damage.
- **Lightweight** - There is no need for heavy ballast with the Adhesive adhered system. As a lightweight roof assembly, an adhered Lexcan membrane roof can save thousands of dollars by reducing the roof's structural support requirements.
- **Aesthetically Appealing** - Available in several colours, a visible Lexcan single ply roof system can architecturally enhance the overall appeal of a building.
- **Rooftop Advertising** - Emblems or logos can be fabricated into the membrane for inexpensive and highly visible advertising!
- **Energy Efficient** - Use of exposed light coloured membranes can significantly reduce air conditioning costs in the summer. White and tan coloured, Lexcan membranes are Energy Star® compliant and may be used to earn points under the LEED system.
- **Easy to Maintain** - Physical damage to the membrane can be easily located and inexpensively repaired.
- **The Backing of Lexcan** – North America's premier supplier of single ply membrane system roofs. No other company can match Lexcan's breadth and experience in Canadian roofing.

## APPROVALS & COMPLIANCES

Lexcan Adhesive Adhered Roof Systems have been tested for fire resistance, wind uplift resistance and hail resistance. They are listed and approved by Underwriter's Laboratories\* and Factory Mutual Global†. They are also accepted in roofing

contractor provincial warranty programs.

Lexcan Hi-Flex EPDM membranes meet CGSB 37-GP-52M and are listed under CCMC. Lexcan Hi-Tuff TPO meet and exceeds ASTM D6878-03. Lexcan Hi-Pro PVC membranes meet CGSB 37-GP-56M. Independent laboratory test results are available on request.

\* Visit: [www.ul.com](http://www.ul.com). Click on "Certifications", then search on Lexcan.

† Visit: [www.roofnav.com](http://www.roofnav.com). After opening an account, search on Lexcan.

## Limitations

Single ply membranes are slippery when wet. Appropriate placement of Lexcan Traffic Pads will normally alleviate any slip hazard concerns.

Certain chemicals or industrial pollutants may attack the membrane. Where an unusual chemical may come into contact with the membrane, contact Lexcan to determine chemical compatibility or for information on alternative chemical resistant membranes.

## ADHESIVE ADHERED ROOF SYSTEM ALTERNATIVES

When one considers all the thicknesses, types and colours available, Lexcan offers 28 different single ply membranes that can be adhesive adhered, using three different types of adhesive! For more information on the choices and benefits of each membrane type, refer to Lexcan's EPDM, TPO or PVC sales brochures. The following addresses the main factors a designer should consider when choosing an adhesive adhered roof system.

### Longevity & Warranty

All Lexcan single ply membranes are designed for long-term performance. Nevertheless, thicker membranes can be expected to last longer than thinner ones and that is reflected in the length of warranty available from Lexcan. For current warranty offerings from Lexcan, consult with a Lexcan representative.

### Resistance to Physical Abuse

Adhered single ply membranes offer superior resistance to puncture and physical abuse in comparison to other types of roofing systems. Thicker membranes, reinforced membranes or walkway systems should be considered in or near high traffic areas or on roofs that might be subject to vandalism. Puncture resistance may also be enhanced by adhering the membrane to a hard coverboard or substrate such as exterior grade gypsum, high density fibreboard, high density polyiso, OSB or plywood.

In addition to the additional reinforcement they offer, fleece-backed membranes are ideal for applications directly over rough surfaces. They can even be used to re-cover certain existing smooth-surface roofs without the requirement of a protection board. Contact Lexcan for more information on direct re-cover applications.

### Colour

What colour would you like your roof to be? Lexcan membranes are available in standard colours of black, white, tan and grey. Custom colours are also available for minimum orders of 10,000 m<sup>2</sup> (100,000 ft<sup>2</sup>) of membrane.

White and tan TPO and PVC membranes meet Energy Star™ requirements as heat reflective membranes and can qualify for one point in LEED projects. Use of a heat reflective membrane can reduce air conditioning costs and help the environment.

cont.

## Environmental Friendliness

In addition to membrane colour, certain adhesives are more environmentally friendly than others. Refer to the “Adhesive Alternatives” section below for more information

## Adhesive Alternatives

LEXCAN HI-FLEX EPDM BA-90, HI-TUFF TPO & HI-PRO PVC BONDING ADHESIVES

These products are synthetic rubber based adhesives specially designed to adhere single ply membranes. They are applied to the underside of the membrane as well as the substrate before the two materials are brought together. They have exhibited excellent performance over the decades that they have been on the market. One disadvantage that they have, however, is that as solvent based products they contain volatile organic compounds (VOC)’s.

### LEXCAN BA-160 BONDING ADHESIVE

As a water based material, Lexcan BA-160 is an environmentally friendly, VOC free product. Properly applied, it adheres as strongly as the more traditional solvent based products. The application of BA-160 differs, depending on what type of membrane it is being used with. With EPDM and fleece-backed membranes, it can be applied in a one coat application. With TPO, it requires a two coat (to the membrane and to the substrate) application.

BA-160 cannot be frozen or applied in near freezing temperatures. It should therefore not be used in winter like conditions.

### LEXCOR INSULTAC II ADHESIVE

InsulTac II provides a unique alternative for adhering fleece-backed membranes. Based on a proprietary two-part, low rise foaming polyurethane technology, InsulTac II rises up to grab the fleece of the membrane before the adhesive sets. Once set, the membrane is mechanically locked to the substrate. InsulTac II is VOC free.

## Lexcan Adhesive Adhered System Alternatives

This table summarizes the alternative systems that are available from Lexcan:

System	Membrane & Thickness Alternatives	Standard Colours	Adhesives
A1	Lexcan Hi-Flex Standard EPDM Membranes S-60 (1.5 mm), S-90 (2.3 mm)	Black, White	BA-90, BA-160
A3	Lexcan Hi-Flex Reinforced EPDM Membranes R-45 (1.1 mm), R-60 (1.5 mm), R-75 (1.9 mm)	Black	BA-90, BA-160
A5	Hi-Flex Fleece-backed CA EPDM Membrane FB-100-CA (2.54 mm), FB-115-CA (2.92 mm) & FB-145-CA (3.68 mm)	Black	BA-90, BA-160, Insultac II
A8	Hi-Tuff TPO Membranes HT-45 (1.1 mm), HT-60 (1.5 mm) & HT-80 (2.0 mm)	White, Tan, Grey	BA-90, BA-160
A10	Hi-Tuff Fleece-backed CA TPO Membranes FBHT-100-CA (2.54 mm) & FBHT-115-CA (2.92 mm) & FBHT-135-CA (3.43 mm)	White, Tan, Grey	BA-90, BA-160, Insultac II
A13	Lexcan PVC Membranes HP-50 (1.2 mm), HP-60 (1.5 mm) & HP-80 (2.0 mm)	White, Grey	PVC Adhesive

#: Requires two coat application (one on the membrane; one on the substrate).

## ROOF DESIGN CONSIDERATIONS

### Roof Deck

There are no slope limitations to using the adhesive adhered system.

Where the insulation is to be mechanically fastened, the deck must meet Lexcan’s (or the building authority’s) minimum requirements for sufficient fastener pull-out resistance for the type of fastener selected.

Where the insulation or membrane is to be adhered to the deck, the deck surface must be clean, free of dirt, dust and grease, structurally sound and compatible with the adhesive to be used.

### Bonding Directly to Structural Substrate

Where the roof is to remain uninsulated, the Lexcan membrane may be fully adhered directly to the following substrates:

Substrate	Limitations / Comments
Concrete	Clean, steel troweled or wood float finish required
Wood	No protruding nails, splinters or ridges.
Metal	Must be flat and clean, with hemmed edges.

### Wood Nailers

Wood nailers are required along all roof edges and at other locations as shown in Lexcan details. Nailers must be new #2 grade wood or better, factory pressure treated for rot resistance. Asphaltic or creosote treated wood is not acceptable. Lexcan requires that wood nailers be attached to the deck to resist a minimum force of 300 kg/m, in any direction.

### Vapour Retarder

An effective vapour retarder system is recommended for all buildings in northern climates to protect insulation and other building components from damage caused by internal humidity drives.

### Insulation / Construction Panels

Insulation must be a rigid board type with strong cohesive strength and compatible with Lexcan bonding adhesive. Multiple layers of insulation must either be adhered together in an acceptable fashion or mechanically fastened.

The following insulations and coverboards may be used in an adhered system:

Insulations†:	Restrictions:
Polyisocyanurate	Organic/inorganic facer or coverboard laminate required. Foil facer not acceptable.
Expanded Polystyrene	Only with acceptable coverboard overlay.
Extruded Polystyrene	Only with acceptable coverboard overlay.
Rock Wool	Coverboard Overlay Required.
Coverboards:	
Gypsum Board	Water resistant or exterior grade required.
Fibreboard	High Density, min. one side asphalt coated.
Perlite Board	Not Acceptable
Polyisocyanurate	High Density

For re-cover applications, refer to Lexcan’s Technical Bulletin #TB 02-03.  
†: Refer to Lexcan’s Adhesive Adhered Sample Specification for insulation thickness requirements when mechanically fastening.

cont.

## Insulation & Construction Panel Fastening

### MECHANICAL FASTENING

Mechanically fastening the insulation is usually the preferred method for steel or wood decks though it can be done on concrete decks as well. Factory Mutual approved insulation fasteners and plates must be used. Note that the fastener points will penetrate the underside of the deck. Extra care should therefore be taken if electrical, gas or other utility conduits run immediately under the deck.

The number and density of fasteners required depends on the type and thickness of insulation as well as which wind zone the building is located in.

### ASPHALT ADHERING

While asphalt may be used to adhere different layers of insulation together, it is not acceptable for adhering insulation directly to a steel deck. When applying to a concrete or wood deck, the deck should be structurally sound, free of dust, debris and grease and first primed with an asphalt primer. Insulation panels cannot be any larger than 122 cm (four feet) in any dimension.

Note: The heating of roofing asphalt yields an odour that some might find obnoxious.

### ADHESIVE ADHERING

Adhesive may be used to secure the insulation in certain applications. For Lexcan to accept the use of an adhesive, the adhesive manufacturer must a/ specifically approve the use of their product on the project in question in writing and b/ demonstrate satisfactory past performance in similar applications.

Insulation panels to be adhered must be no larger than 122 cm (four feet) in any dimension. In all cases the proposed assembly must be reviewed in advance by a Lexcan technical representative if a Lexcan warranty is desired.

### Metal Counter Flashing

All metal counter flashing in direct contact with the membrane must be double-hemmed, with rounded corners and smooth, burr free edges.

### Re-roofing Considerations

Existing roof surfaces often present a variety of conditions that can only be dealt with on a job by job basis. Lexcan recommends that a roofing consultant, experienced contractor or its own personnel be engaged to evaluate the condition of the existing roof prior to installing a new Lexcan roof. In general, the following procedures must be carried out before installing a Lexcan roofing system.

- Gravel, slag and ballast must be removed. The existing roof membrane must be made dry and reasonably smooth. Dirt and debris must be removed.
- Wet insulation must be identified, cut out and replaced with dry insulation.
- Existing insulation and membrane must be checked for proper adhesion/fastening to the deck, where required. Fishmouths or

bumps in the existing membrane must be flattened and holes patched with compatible materials.

- New insulation or recovery board must be secured to the existing roof in accordance with our minimum requirements.\*
- Bitumen coated walls and parapets must be covered with mechanically fastened plywood or hem-edged sheet metal.

\*For Lexcan's complete re-cover requirements, refer to Lexcan's Technical Bulletin #TB 02-03.

### Time of Installation

Wherever possible, adhesive adhered roof systems should be scheduled for warm weather seasons to avoid construction delays due to cold temperatures.

New buildings should be at least 80% encapsulated (doors and windows installed, etc.) before construction of the roofing system can commence.

In order to protect the completed roof on new construction projects, the construction manager should ensure that other trades protect the membrane in the areas they are working.

## WARRANTIES & WARRANTY REQUIREMENTS

In North America, Lexcan fully backs its roofing and waterproofing systems with comprehensive, long-term Lexguard warranty programs. Lexguard Ultimate warranties are available only on non-mobile commercial, institutional or industrial properties only. Four preconditions must be met to qualify for a Lexcan warranty:

- The roof must be installed by an approved applicator of Lexcan.
- The roof must be installed in strict accordance with current Lexcan specifications and details (or Lexcan approved alterations).
- Lexcan must be advised in writing by the contractor a minimum of two weeks prior to the commencement of the project that a warranty is requested.
- All membrane accessory components must be Lexcan products.

For further information on the terms and conditions of Lexcan's warranties, please consult your Lexcan representative.

## AVAILABILITY & TECHNICAL ASSISTANCE

Lexcan Roofing Systems are available across North America through our local offices and distributors. Lexcan representatives will be pleased to assist you in system selection or roof design. For the address or telephone number of the office nearest you, please contact our head office by phone at 877-792-8308, e-mail at [info@lexcan.com](mailto:info@lexcan.com) or by fax at 905-792-8305.