

## RISK INSIGHTS

### ROOF COVERINGS

**Proper roof cladding is an essential part of protecting a building against water infiltration. All types of coverings require some attention and appropriate maintenance to maintain their expected levels of protection.**

#### THE MOST COMMON TYPES OF ROOF COVERINGS ARE:

- Built-up roof coverings
- Modified bitumen roof coverings
- Single-ply membrane roof coverings (EPDM and TPO)
- Shingle roof coverings

#### **Built-up roof coverings**

Commonly referred to as “tar and gravel” roof coverings, have an average lifespan of sixteen years. This type of cladding is made up of successive layers of asphalt felt and asphalt that are covered with gravel.

#### **Cross-section diagram: Four-ply built-up roofing**

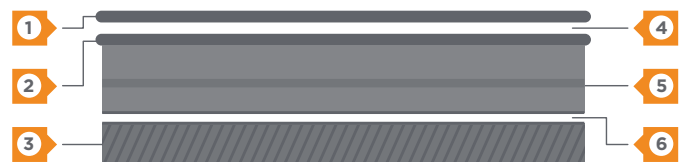


1. Gravel
2. Four layer of felt glued together with tar
3. Roof insulation
4. Multiple layers of felt
5. Vapour barrier
6. Concrete, wood, or metal (roof structure)

#### **Elastomeric modified bitumen roof coverings**

These coverings have a lifespan between twenty-one to thirty years. They are made up of two layers: a base membrane and a cap sheet membrane topped with coloured granules, which are much like the gravel on built-up asphalt membranes.

#### **Cross-section: elastomeric modified bitumen membrane**



1. Cap sheet membrane with granules
2. Base membrane
3. Concrete, wood, or metal (roof structure)
4. The two layers are heated-welded
5. Roof insulation
6. Vapour barrier

### EPDM or TPO single-ply membrane roof coverings

These coverings are applied in a single layer. EPDM sheets are very large, which reduces the number of seams required. They are UV-resistant for forty to fifty years and have no surface granules. EPDM roofing expands and contracts with temperature changes. Special attention should be paid to the perimeter and flashing, as the membrane can become unfastened in these areas.

#### Cross-section: single-ply membrane



1. One layer membrane
2. Roof insulation
3. Vapour barrier
4. Concrete, wood, or metal (roof structure)

### Different types of shingle roof coverings

Different types of shingles are available, the most common being asphalt shingles. Unlike the roof coverings mentioned above, shingle coverings require a suitable roof pitch. The lifespan of shingles varies considerably depending on numerous factors, including the type and quality of the shingles used; the climatic conditions to which they are exposed also affect their longevity. Although shingles are mentioned here, this document does not discuss this type of roof covering further.

The quality of the installation of a roof covering is as important as the quality of the materials used. Poor installation can lead to water infiltration and premature aging. For example, when a built-up roof covering is poorly installed, pockets of air or moisture can become trapped between the layers. If these blisters burst, the resulting holes can increase the risk of water infiltration.

Certain factors accelerate wear and tear on a roof covering: heat, thermal shock, ultraviolet radiation (solar rays), physical damage (traffic on the roof covering), water and wind erosion, movement of components, loss of watertightness, chemicals in the atmosphere, etc.

### Winter maintenance

It is best to avoid having snow or ice accumulate on the roof covering. Excess weight on the roof can damage the structure and roof covering.

Excess snow and ice can also create ice dams, which prevent drainage of the roof covering. This increases the risk of water infiltration.

Lastly, any excess snow or ice prevents control and expansion joints from working properly. These joints are designed to allow materials to contract and expand.

As a general rule, snow and ice removal from a roof is required when the snow or ice is more than 20 cm (8 in.) high. However, doing so is not without risk.

Other than fall risks for workers, here's a list of items to keep in mind for winter maintenance:

- Use wood or plastic shovels, and stop at least 10 cm (4 in.) above the finished surface of the roof covering.
- Avoid sharp tools (e.g., axes or picks). Use rubber mallets to break up ice.
- Avoid using excessive heat (e.g., welding torches), which could damage the roof covering
- Be careful when using de-icing salt, which can accelerate corrosion of the roof's metal components.
- Ensure there is good water drainage.

For more information on making your business safer, contact our Risk Services team at **1.833.692.4111** or visit us at [www.northbridgeinsurance.ca](http://www.northbridgeinsurance.ca).

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### ROOF COVERINGS CHECKLIST

**As a preventive measure, it is recommended that roof coverings are checked at least twice a year. The roof should preferably be checked in the fall and late winter when the roof covering is completely free of snow and ice.**

**Here is a list of items that should be checked.**

Items to check	Additional information	
Signs of water infiltration (water spots, peeling paint or loose plaster inside the building).	Check paint that is chipped or peeling. Look for signs of discoloration on the upper parts of walls.	<input type="checkbox"/>
Debris on the roof.	Never leave objects on the roof covering. Debris left on the roof can damage or wear away at the roof covering.	<input type="checkbox"/>
Water accumulation or signs of retention caused by a blocked drain or a drain that was installed too high; drain obstructions—ensure that the drain baskets are in place and in good condition.	In favourable conditions, water should not stay on a roof covering for more than forty-eight hours. If water collects, check that it runs toward a drain and that any drains are free of leaves, debris or other obstructions. Check that protective baskets are in place and in good condition.	<input type="checkbox"/>
Physical damage caused by heavy equipment placed directly on the roof covering, by snow or ice removal (see winter maintenance above), by tree branches, by vegetation, etc.	Tree branches can scrape against the roof covering. Look for signs of plant growth on the roof covering.	<input type="checkbox"/>
Ripples, wrinkles and blisters; rolled-up felt (for built-up roof coverings).	Blisters—do not try to pull at them or push them out as this could create holes in the membrane.	<input type="checkbox"/>
Cracks caused by movement of the structure or by excess snow and/or ice (especially for built-up roof coverings).	Cracks—these are often caused by structural shifts or an excess of snow. Building movement can create cracks in the membrane.	<input type="checkbox"/>
Sections stripped of gravel (for built-up roof coverings).	Missing gravel is caused by wind and water erosion, freezing and thawing, and traffic on the roof covering. The thickness of the gravel covering the membrane should be that recommended by the manufacturer.	<input type="checkbox"/>
Collapsed or soft areas.	With structural subsidence, signs of cracking may be visible from inside the building. For collapsed insulation caused by excess weight, a product defect or deterioration of the insulation due to water absorption, there are generally no signs visible from inside.	<input type="checkbox"/>
Seams between the membranes, and caulking seams.	Check the watertightness of all seams on the roof covering, including caulking seams.	<input type="checkbox"/>
Lifting of mechanical fastenings.	Check that the membrane has not been punctured by fasteners that have lifted up. Lifting may occur if nails are too short or if there is deformation or corrosion of the support material, poor installation, collapsed insulation, etc.	<input type="checkbox"/>
Missing or defective walkways.	Check the condition of walkways.	<input type="checkbox"/>
Alligatoring—bitumen that shows through the gravel (for built-up roof coverings).	Check for alligatoring—bitumen that shows through the gravel (for built-up roof coverings).	<input type="checkbox"/>
Lifting and/or cracks.	Check for lifting and/or cracks in between the membrane and the metal flashing (at the fascia board).	<input type="checkbox"/>

Items to check	Additional information	
Missing, unfastened or corroded metal flashing.	Check for watertightness and water infiltration or condensation, and check the condition of the flashing.	<input type="checkbox"/>
Unsealed, uninsulated, punctured or broken vents.	Check for unsealed, uninsulated, punctured or broken vents.	<input type="checkbox"/>
Skylights.	Check skylights for watertightness and water infiltration or condensation, and check the condition of the flashing.	<input type="checkbox"/>
All roof equipment—devices must be held solidly in place and properly caulked.	Check that projections such as the base of fans, the base of posts, supports for future flooring, air conditioning units, plumbing vents, skylights, chimneys, frames and ladders are installed correctly. Check that the vibration of mechanical devices does not damage the seams at the base.	<input type="checkbox"/>
Gutters (unhooked, broken, missing or obstructed).	Check the watertightness of the seams between the fascia board and the eavestrough. Remove any debris from the eavestroughs to allow water to flow freely.	<input type="checkbox"/>
Walls and parapets.	Check the walls for openings or cracks in the seams where water could get in. Check any mortar joints.	<input type="checkbox"/>
Roof space—where applicable, check that ventilation elements are not obstructed; check that lights and other equipment on the underside are properly insulated.	Check that the air ducts from dryers, bathroom fans, kitchen range hoods, etc., do not vent into the roof space. Check that ventilation of the roof space is not obstructed. Check that lights are properly insulated; the heat they give off can melt snow on the roof and cause ice dams.	<input type="checkbox"/>
Oil paint—check that no oil paint is touching the membrane.	Check that no oil paint touches the membrane (e.g., when you paint roof equipment), since oil paint can damage the membrane. Keep the membrane from touching any petroleum-based fluids, lubricating greases, oils, fats, chemicals, etc.	<input type="checkbox"/>