Caring for SHINGLE ROOFS

Spray On

Simplicity
The Anti-Aging Solution for Asphalt Shingles-
Restores Vitality and Prevents Premature Roof Aging

- **Shingle Restorer™** is a patented organic micropenetrant™ emulsion that rejuvenates and re-saturates asphalt roofing systems at a molecular level to help keep your asphalt shingle roof in pristine condition. Shingle Restorer™ reduces surface tension and surface shrinkage - the leading cause of granule loss from the outer protective mineral layers of Asphalt Shingles and SBS Modbit roofing systems.

- **Shingle Restorer™** is 100% eco friendly and contains natural ingredients which add life and vitality to weathered asphalt roofs. Shingle Restorer™ rejuvenates shingles and re-saturates seal strips that keep asphalt roofs watertight, much like applying hand lotion helps relieve the discomfort of dry and cracked skin, applying Shingle Restorer to aging asphalt roof shingles has a moisturizing effect on shingles.

- **Shingle Restorer™** is EASY to apply. A simple, garden type pump sprayer is all that's needed to apply Shingle Restorer™ to your roof.

What makes Shingle Restorer™ Different from Traditional Roof Coatings?

- **Shingle Restorer™** is a patented organic micropenetrant™ that re-saturates shingles at a molecular level. Once shingles loose their elasticity and become brittle, they shrink causing both granule loss the seal strip failure. Shingle Restorer™ is spray applied to roofs and within 72 hours it's active ingredients micro penetrate and rejuvenate the fiber core layer of Asphalt Shingles and SBS Modbit roofing systems, making them pliable and flexible to facilitate daily expansion and contraction.

- The patented ingredients in **Shingle Restorer™** re-saturate the shingles and the seal strips which bond shingles together to keep your roof weather tight and protected from the elements.

- **Shingle Restorer™** is **not a coating or a sealant**. Unlike traditional elastomeric and urethane roof coatings which are simply applied to the outer surface of roof shingles to seal the exterior surface of the roof with a thick UV resistant layer of pigmented coating, Shingle Restorer™ actually rejuvenates shingles by re-bonding the granular protective layer to the surface without changing the colour or aesthetics of your roof. Traditional Roof coatings do not re-saturate or restore elasticity and pliability to weathered asphalt roof shingles and they change the colour and aesthetics of your roof.
Caring for Asphalt Shingles

Before you Start – About Organic and Fibreglass Asphalt Shingles

1. There are two basic kinds of asphalt shingle roofs, organic and glass fibre, or more popularly known as fibreglass. Both types benefit from the application of Shingle Restorer™.

2. Organic asphalt shingles are composed of organic felt paper soaked in asphalt to repel water. Premium organic shingles (40 & 50 year shingles) are generally double dipped in asphalt during their manufacturing process. Organic asphalt shingles contain up to 40% more asphalt than fibreglass shingles which makes organic asphalt shingle both heavier and stronger.

3. Fibreglass shingles are reinforced with a glass fibre mat that is shaped into shingles. This mat is then coated with asphalt to increase its durability. In order to make sure that the asphalt sticks to the mat, asphalt fillers are used to cover voids and holes in the mat.

4. Ground or pulverized limestone (calcium carbonate or GCC) or dolomite (calcium magnesium carbonate) is used extensively in asphalt roofing shingles, both fiberglass-reinforced and organic-mat-based roofing. These products have two primary functions. First, as fillers, ground calcium carbonates reduce cost by replacing a portion of the asphalt. Second, they improve the physical performance properties of the shingles. Hydrated lime has earned the reputation as a premier asphalt additive to mitigate moisture sensitivity and adhesion failure. In addition, lime contributes other benefits to asphalt such as retarding the rate at which shingles age and oxidize.

5. Correctly installed, quality manufactured asphalt singles have few problems. Most problems arise from poor installation and improperly ventilated attics. Wind can cause shingles to uplift or tear off, and excess moisture can cause mildew problems.

6. The cost, maintenance, and lifespan of asphalt shingles depends on the environment. Typically the hotter the weather, the shorter the lifespan of the shingle. Drastic and sudden temperature changes, also called thermal shock can cause shingles to expand and contract too quickly, causing cracks and splits.

Why Asphalt Shingles Fail?

1. Asphalt shingles are generally the most exposed and least maintained element of the entire building envelope. Shingle roofs experience massive surface temperature swings on a daily basis, ranging between 130°F -70°F in summer and 60°F to -15°F in winter.

2. Ongoing expansion and contraction caused by daily temperature swings causes shingles to lose their outer protective granular layer. This results in increased UV exposure and irreparable damage to the adhesive seal strips that bond shingles together.

3. Over time UV radiation from the sun leaches these petrochemical based volatile compounds out of asphalt shingles and the shingles begin to dry out, curl and crack.
1. **Shingle Restorer™** is a non toxic organic micropenetrant™ that re-saturates shingles at a molecular level. It adds vitality and pliability to brittle shingles by replacing petro-chemical VOC’s with eco friendly ingredients less prone to UV radiation & evaporation.

2. **Shingle Restorer™** is a patented emulsion that can be diluted with water at different ratios to accomplish specific shingle maintenance, rejuvenation and restoration goals.

3. **Shingle Restorer™** is typically spray applied to asphalt roofs. Within 72 hours the active ingredients in **Shingle Restorer™** micro penetrate and rejuvenate asphalt shingles making them pliable and flexible to facilitate daily expansion and contraction.

4. **Shingle Restorer™** re-seats granules and restores color, vitality and pliability to asphalt shingles and will extend shingle roof life when applied on a regular basis.

5. **Shingle Restorer™** re-saturates both shingles and the seal strips that bond shingles together to keep roofs weather tight. When shingles loose their elasticity and become brittle, their seal strips fail.

6. The shingles begin to curl, claw, crack and break which exposes them to wind and weather damage.

### Advanced Signs of Asphalt Shingle Roof Failure

<table>
<thead>
<tr>
<th>Curling Shingles</th>
<th>Clawing Shingles</th>
<th>Buckling Shingles</th>
<th>Broken Shingles</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the exposed outer mineral surface of asphalt shingles dry out, the shingles start to curl, causing the seal strips which keep your roof watertight to fail. Curling shingles are susceptible to substantial damage by wind, hail and ice.</td>
<td>Clawing (the opposite of curling) is the <strong>curling under</strong> of the shingle tab's bottom edge and is considered part of the normal aging process of shingles. Clawing makes shingles susceptible to damage by wind, hail and ice.</td>
<td>Moisture build-up in the attic penetrates the underside of the shingles through vertical joints in sheathing board. Because the shingles are damp beneath the surface and extremely dry on the exposed mineral surface, shingles buckle.</td>
<td>Damage to roof shingles is inevitable once the seal strips that hold shingles together fail, making them susceptible to extreme wind conditions and snow removal. Broken, torn or missing tabs become entry points for water makes shingles vulnerable to wind.</td>
</tr>
</tbody>
</table>

Shingle Restorer™ (SR) helps prevent curling by re-saturating shingles, restoring moisture equilibrium and re-seating granules. SR re-saturates the seal strips which keep roofs watertight.

Shingle Restorer™ (SR) helps prevent clawing by re-saturating shingles, restoring moisture equilibrium and re-seating granules. SR re-saturates the seal strips which keep roofs watertight.

Shingle Restorer™ (SR) helps prevent buckling by re-saturating shingles, restoring moisture equilibrium and re-seating granules. SR re-saturates the seal strips which keep roofs watertight.

Shingle Restorer™ (SR) helps prevent breaking by re-saturating shingles, restoring moisture equilibrium and re-seating granules. SR re-saturates the seal strips which keep roofs watertight.
Usage Instructions

- **Product Background:** Asphalt roofing ages through photo-oxidation and heat from the sun which often drives summer roof surface temperatures above 132°F. The asphalt's melt point increases due to ongoing loss of plasticizers which keep asphalt roofing systems pliable and flexible and facilitate daily expansion and contraction. Loss of these plasticizers leads to surface shrinkage which causes asphalt roofing to become brittle and crack. Shingle Restorer™ is a patented organic micropenetrant™ emulsion that rejuvenates and re-saturates asphalt roofing systems, reducing surface tension and surface shrinkage - the leading cause of granule loss from the outer protective mineral layer of Asphalt Shingles and Modbit BUR roofing systems. Shingle Restorer™ actually rejuvenates shingles by re-bonding the granular protective later to the outer surface without changing the colour or aesthetics of your roof.

- **Description:** Shingle Restorer™ is a water based, non toxic, organic emulsion that reduces the impact of solar UV degradation on asphalt roof shingles and SBS Modbit roof systems. Shingle Restorer™ can be spray or brush applied to asphalt roofing systems to help restore pliability, flexibility and extend roof life. Unlike traditional roof coatings which are applied to the outer protective mineral layer of Shingles and SBS Modbit roofing systems, Shingle Restorer™ micro-penetrates the outer mineral layer and rejuvenates the inner fiber reinforced layer and the adhesive seal strips that keep shingle and membrane roofs watertight. Shingle Restorer™ allows shingle roof systems to “breath” naturally by absorbing and releasing moisture, unlike elastomeric and urethane roof coatings which inhibit roof surfaces from “breathing” and can accelerate the roof aging process.

- **Features:** Shingle Restorer™ is an organic asphalt micropenetrant™ containing no solvents, VOCS or environmentally toxic ingredients. Overspray is not harmful to people, pets, plants, cars or the environment and can be washed off with soap and water. The product forms a milky white residue on roof surface when initially applied, which dissipates after 1-2 hours.

- **Uses:** 1) As a non toxic micropenetrant™ for spray or brush application to all types of asphalt shingle roofs. 2) As a non toxic micropenetrant™ for spray or brush application to SBS Modbit roof systems.

- **Limitations:** Shingle Restorer™ is formulated to prevent granule loss, premature curling, cracking, buckling and ‘alligatoring’ of asphalt roof shingles and SBS Modbit roof systems. If advanced signs of any of these conditions is already evident within the roof system, the benefits of Shingle Restorer™ will be limited. Application of the product below 10 degrees Celsius will negate product efficacy.

- **Preparation:** Ensure roof surfaces are dry and free from moisture and frost. Clear roof surface of all loose debris, and use a broom or blower to remove loose dust and dirt. Do not apply Shingle Restorer™ if rain is expected within 6-8 hours of application.

- **Application:** For maximum efficacy, the ideal temperature for applying Shingle Restorer™ is between 10°C/32°F and 30°C/86°F. Surface temperature must remain above freezing for at least 24 hours after product is applied.

- Do a trial test before application. The roofs surface color appearance will darken slightly during application until fully dry. When using a sprayer, move all objects that could come in contact with wet over spray. Start applying product at the furthest point of roof to avoid the
need to walk across treated roof surfaces which will be slippery while wet. Spray or brush apply evenly, working from side to side in 4-5 foot sections from the top of the roof to the eave. Spray until surface has a wet milky consistency. Avoid run off and pooling. Use a 4’x4’ sheet of poly protection board when spray applying product. This helps prevent overspray from coming in contact with adjacent walls, siding, cars, furniture, decks, plants and shrubs. Over spray can easily be removed by flushing immediately with water while wet and with soap and water when dry. Do not apply if rain is expected within 6-8 hours.

- **Coverage:** Shingle Restorer™ is supplied in 5 US Gallon Pails (18.9L). Spray application provides best results and coverage (150sq.ft.-160sq.ft./gallon), while Brush or Roller Application provides 110sq.ft.-130sq.ft/gallon.

**Dilution Rates**

1:1 – Restoration Mix- Shingle Restorer™ weather protects shingles for up to 3 years. This deep penetration treatment re-seats granules, re-saturates upper asphalt coating layer and inner fibre layers, plus re-saturates seal strips. Mixing 1:1 enhances roof color by 3 shades and will reduce stain visibility caused by mould. Recommended for Shingle Roofs 11-15 years and older.

2:1- Rejuvenation Mix- Shingle Restorer™ weather protects shingles for up to 2 years. This intermediate penetration treatment re-seats granules and re-saturates upper asphalt coating layer and inner fibre layers. Mixing 2:1 enhances roof color by 2 shades. Recommended for Shingle Roofs 5-10 years old.

3:1- Revitalization Mix - Shingle Restorer™ weather protects shingles for 1 year, re-seats granules, and replaces the petrochemicals which are naturally absorbed in to the atmosphere with active vegetable oil ingredients which are less prone to UV evaporation. Mixing 3:1 will enhance roof color by 1 shade and reduce the damaging effects of UV degradation as your roof shingles progressively age. Shingle Restorer™ gently revitalizes the inner fibre layers of shingles and enriches roof color by 1 shade.

- **Storage and Clean Up:** Protect product from freezing. Do not store below 10°C/32°F. Wash tools and brushes with clean water and flush sprayer tanks out with fresh water.

- **Warning:** Avoid walking over wet surfaces which will be slippery while wet. DO NOT apply more than one coat as roof shingles will become tacky. DO NOT USE UNDILUTED or in concentrations above 1:1

Shingle Restorer™ keeps asphalt shingles on roofs longer and out of landfills -saving the environment and saving you money.
# Shingle Restorer™

**Solar Activated Asphalt Shingle Maintenance Formula**

<table>
<thead>
<tr>
<th>Recommended Use</th>
<th>Maintains Shingles</th>
<th>Revitalizes Shingles</th>
<th>Rejuvenates Shingles</th>
<th>Restores Shingles</th>
<th>Granulation Primer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parts Water</td>
<td>Dilution 10</td>
<td>Dilution 3</td>
<td>Dilution 2</td>
<td>Dilution 1</td>
<td>Dilution 1</td>
</tr>
<tr>
<td>Parts SR</td>
<td>Roof Rating 2</td>
<td>Roof Rating 2</td>
<td>Roof Rating 2</td>
<td>Roof Rating 2</td>
<td>Roof Rating 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Roof Age</th>
<th>1-4 Years</th>
<th>5-7 Years</th>
<th>8-10 Years</th>
<th>11-15 Years</th>
<th>5 years +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule</td>
<td>36 Months</td>
<td>36 Months</td>
<td>36 Months</td>
<td>36 Months</td>
<td>36 Months</td>
</tr>
<tr>
<td>Rain Ready</td>
<td>4 hrs</td>
<td>4 hrs</td>
<td>6 hrs</td>
<td>8 hrs</td>
<td>24 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Revitalizes Color</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-seats Granules</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Re-saturates Asphalt</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Re-saturates Fiber/Felt Core</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Re-saturates Seal Strips</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Granulation Primer</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

| Helps Extend Shingle Life | ✔ | ✔ | ✔ | ✔ | ✔ |
| Helps Prevent Shingle Cracking | ✔ | ✔ | ✔ | ✔ | ✔ |
| Helps Prevent Shingle Curling | ✔ | ✔ | ✔ | ✔ | ✔ |
| Helps Prevent Granule Loss | ✔ | ✔ | ✔ | ✔ | ✔ |

| Safe For the Environment | ✔ | ✔ | ✔ | ✔ | ✔ |
| Safe For Your Garden | ✔ | ✔ | ✔ | ✔ | ✔ |
| Safe For Family and Pets | ✔ | ✔ | ✔ | ✔ | ✔ |
| Safe For Cars and Patio Furniture | ✔ | ✔ | ✔ | ✔ | ✔ |
| Safe For Paving and Lane Ways | ✔ | ✔ | ✔ | ✔ | ✔ |

<table>
<thead>
<tr>
<th>Cost Per Sq. Ft</th>
<th>2 cents</th>
<th>5½ cents</th>
<th>7½ cents</th>
<th>11½ cents</th>
<th>22½ cents</th>
</tr>
</thead>
</table>
Shingle Failure – Phase 1

Loss of Granules, Plasticizers and VOC’s

- This process begins gradually during the first 3-5 years of the asphalt shingles life as it is progressively being weather exposed. Over time UV radiation from the sun naturally leeches the petrochemical VOC’s (volatile organic compounds) and plasticizers out of asphalt shingles causing them to become brittle.

- The **upper asphalt coating layer** which bonds the outer protective mineral layer to the shingles surface starts to dry out and oxidize. This leads to **phase 1 granule loss**. (see image below)

- **Phase 1 granule loss** exposes the asphalt shingles **upper coating layer** to UV radiation damage. Each granule lost creates a new leaching point from which VOCS are emitted at a faster rate that adjacent areas resulting in oxidization.

- This is evidenced by the accumulation of loose stone granules found in the rain gutters of asphalt shingle roofs.

Phase 1 Granule Loss - Macroscopic View.

This slide shows how granule loss creates leaching points for VOC’s which compromise the **upper asphalt coating layer**. Notice how a recent granule loss on the bottom right hand side of this slide exposes darker, fresher asphalt compared to an earlier de-granulation point slightly to its upper left which has since oxidized.)
Shingle Failure –Phase 2

Accelerated Granule Loss, Cracks and Fissuring

- This process begins 7-10 years into the asphalt shingles life as it is progressively weather exposed.

- Accelerating granule loss results in interconnecting pockets of oxidization which develop within the upper asphalt coating layer.

- Brittle ‘pockets’ form in the shingles substrate which impede uniform expansion and contraction as the shingles surface temperature fluctuates on almost hourly basis.

- Surface tension results in micro fissures developing in the shingles substrate.

This slide shows how accelerated granule loss compromises the upper asphalt coating layer. Notice the how widespread de-granulation leads to oxidization and exposed brittle surfaces which impede uniform expansion and contraction of asphalt shingles. The resulting surface tension results in micro fissures developing within in the shingle substrate.
Shingle Failure –Phase 3

Fibre Core Layer Damage

- This process occurs 12-18 years in to the asphalt shingles life as it is progressively weather exposed.

- Fibre core damage now takes place as granule loss continues to accelerate, exposing larger areas of the upper asphalt coating layer to more and more UV radiation damage.

- Without the protection of the outer stone granule layer, the upper asphalt layer gets completely eroded away and exposes the asphalt impregnated fibre layer to rapid decay that leads to failure of the shingle.

Phase 3 Fiber Core Layer Damage - Macroscopic View.

This slide shows how accelerated granule loss and erosion of upper asphalt coating layer eventually results in fiber core layer exposure and damage and total breakdown of the asphalt shingle.