



GenesisRoofRevive.com

# PERFORMANCE TESTING GUIDE

2024

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TESTING PERFORMED BY:

**PRI**

A NATIONAL AND GLOBAL LEADER IN  
MATERIALS TESTING AND PERFORMANCE

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# GRANULAR ADHESION

## Analysis Report



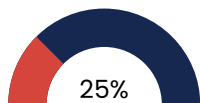
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### INTRODUCTION

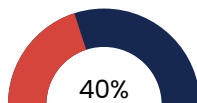
Granular adhesion measures the strength of the bond between the asphalt mat and the protective surface granules, which shield the shingle from harmful UV radiation and weathering. Strong granular adhesion is critical for extending the life of the shingle because when granules wear off too quickly, it can lead to premature aging, increased leaks, and vulnerability to weather-related damage.

### CONCLUSION

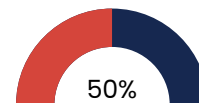
- The results of the granular adhesion test show impressive improvements in the retention of granules compared to untreated shingles of the same age. The following performance enhancements have been observed:



**Better Adhesion for New Shingles**



**Better Adhesion for Shingles Aged 15 Years**



**Better Adhesion for Shingles Aged 30 Years or Nearing Their End of Life**

- These results highlight treated tile superior ability to retain granules over time, compared to a controlled untreated shingle, leading to prolonged durability and better overall protection. This improvement in granular adhesion means less wear, reduced risk of damage, and a longer-lasting roof with fewer maintenance concerns.



# TEAR STRENGTH

## Analysis Report



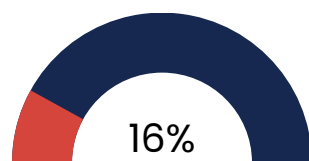
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### INTRODUCTION

Tear strength measures the resistance of a shingle to tearing when subjected to force. This test is vital because shingles are regularly exposed to high winds, heavy rains, and hailstorms, all of which can place significant stress on the roofing materials. If the tear strength is inadequate, shingles may rip easily, leading to extensive roof damage. Strong tear resistance is also crucial during installation, ensuring the shingles do not tear when handled or nailed in place.

### CONCLUSION

- The tear strength test results demonstrate a **16% increase in tear resistance** compared to a controlled shingle of the same age that did not receive treatment. This improvement ensures that treated shingles are better equipped to handle both installation pressures and extreme weather conditions like wind and hail, providing enhanced durability and reducing the likelihood of tears that could lead to water infiltration and costly repairs.



**Increase in  
Tear Resistance**



# PLIABILITY

## Analysis Report



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### INTRODUCTION

Pliability refers to a shingle's ability to bend and flex without cracking or breaking, which is crucial for maintaining the integrity of asphalt shingles, particularly in colder climates where materials tend to become brittle. Retaining flexibility ensures that shingles can be installed in a range of temperatures and conditions, and that they endure natural expansion and contraction without developing cracks, which could lead to leaks and long-term damage.

### CONCLUSION

- During testing, the control shingle had a pliability rating of -3, whereas the treated shingle achieved a rating of -6, representing a **100% improvement** in pliability. This significant enhancement ensures that treated shingles remain more flexible and durable over time, especially in colder environments, reducing the risk of cracking and increasing the overall lifespan of the roof.





# PCB

# LEACHATES

## Analysis Report



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### INTRODUCTION

Polychlorinated biphenyls (PCB) leachate testing is conducted to assess whether harmful chemicals, such as PCBs, are released from shingles when exposed to water, such as rain or runoff. PCBs are toxic chemicals that can have serious environmental and health impacts, including contamination of groundwater and ecosystems, as well as potential long-term health risks to humans and wildlife.

### CONCLUSION

- The test results for PCB leachates were reported as BDL, which stands for Below Detection Limits. This means that the levels of PCBs leaching from shingles were so low that they could not be detected by the testing instruments, indicating no significant presence of these harmful chemicals.
- A BDL result is excellent because it demonstrates that shingles pose minimal risk to the environment and human health. By not contributing detectable amounts of PCBs to water sources, helps to ensure cleaner rainwater runoff and a lower environmental footprint



# EPA

# OLATILES %

## Analysis Report



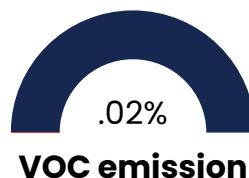
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### INTRODUCTION

The Environmental Protection Agency (EPA) Volatiles test measures the percentage of volatile organic compounds (VOCs) emitted by shingles. VOCs are chemicals that can easily evaporate into the air and may contribute to indoor air pollution, as well as environmental degradation. A low EPA volatiles percentage indicates that the product is safer for indoor air quality and less harmful to the environment, as it releases fewer harmful emissions over time. This is especially important for eco-conscious builders and homeowners seeking sustainable, environmentally friendly roofing options.

### CONCLUSION

- The EPA volatiles test showed a VOC emission of **0.02%**, which is an extremely low and desirable result. This minimal VOC emission ensures that treated shingles are not only safer for the environment but also contribute to better air quality, both during installation and throughout the life of the roof.
- In comparison, products that use bio soybean oil as a key component typically have a **much higher VOC percentage**. While bio-based products may seem environmentally friendly, they can sometimes emit more VOCs due to the volatile nature of plant-based oils. This higher VOC content can lead to greater environmental impact and potential concerns over air quality, especially in regions where regulations on emissions are stringent.
- The **0.02% VOC** result demonstrates that it is a superior option for those prioritizing low emissions and environmental safety, while still delivering performance and durability.





# STIFFNESS & FLEXIBILITY

## Analysis Report



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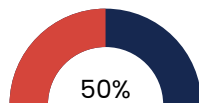
### INTRODUCTION

The stiffness test is typically conducted alongside the flexibility test to provide a comprehensive evaluation of a shingle's ability to perform under various conditions. The stiffness test measures how resistant the shingle material is to bending forces, ensuring the shingles maintain their shape and withstand environmental stress. In contrast, the flexibility test assesses the material's ability to bend without breaking or cracking, particularly in colder temperatures when shingles are more prone to brittleness. These two tests complement each other, as they offer a complete understanding of the shingle's performance across different climates, weather conditions, and installation scenarios. Maintaining a balance between stiffness and flexibility is critical for ensuring the shingles can:

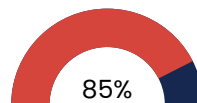
- **Resist deformation** in warmer conditions or during high winds, preserving their shape and protective capabilities.
- **Avoid cracking** in colder temperatures, where shingles often become brittle and more vulnerable to damage.
- **Facilitate easier installation**, since shingles that are too stiff may be difficult to handle, and overly flexible shingles may not stay securely in place.

### CONCLUSION

- Utilizing its **GreenSoy technology**, enhances both the flexibility and stiffness of aged shingles, providing superior protection and longevity. Treated shingles improves the **flexibility of aged shingles by 50%**, ensuring that the shingles maintain their ability to bend without breaking, even as they age. This is particularly beneficial in colder climates where flexibility is key to preventing cracks.
- At the same time, **increases stiffness by 85%** in aged shingles, which is crucial for resisting warping and deformation in extreme weather conditions, such as strong winds and heavy rains. Unlike other products that may improve flexibility but reduce stiffness, treated tiles ensures both properties are enhanced, offering the best possible protection for your roof. This balance allows treated shingles to remain durable, flexible, and structurally sound, ensuring long-term performance and reducing the need for frequent repairs.



**Improved Flexibility**



**Increased Stiffness**



# COLOR CHANGE

## Analysis Report



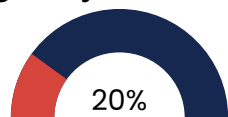
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### INTRODUCTION

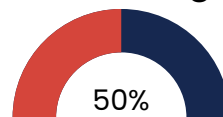
The color change test evaluates how well a shingle resists fading or discoloration when exposed to sunlight and environmental factors. Maintaining consistent color over time not only enhances the aesthetic appeal of a roof but also indicates the shingle's overall durability. Significant fading may signal material degradation, while consistent color retention reflects the effectiveness of the protective granules, especially in shielding the roof from UV radiation.

### CONCLUSION

- After applying, shingles regain **20% more of their original color** compared to other products on the market. In addition, the treated shingles **maintain their color for 50% longer**, ensuring a more vibrant and longer-lasting appearance. This extended color retention not only improves the look of the roof but also suggests superior UV protection, contributing to the overall longevity and durability of the shingles.



**Regain 20% More  
of Original Color**



**Maintain Their Color  
for 50% Longer**



# FLAME RESISTANCE

## Analysis Report



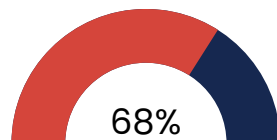
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### INTRODUCTION

The spread of flame test measures how quickly fire can travel across the surface of a shingle. Flame resistance is crucial for roof safety, as limiting the spread of fire can prevent a small fire from rapidly consuming a structure. Asphalt shingles that exhibit high flame resistance provide better protection for homes and buildings, potentially saving lives and reducing property damage.

### CONCLUSION

- One of the biggest concerns with any roof application is the acceleration of fire spread. In testing, an untreated shingle allowed fire to spread 44 inches, while a shingle treated limited the spread to just 14 inches—a **68% improvement in fire resistance**. This significant reduction in the spread of flame demonstrates that treated tiles enhance the safety of the roof, offering critical protection in the event of a fire and reducing the risk of extensive fire damage.



**Improvement in  
Fire Resistance**



# HAIL IMPACT RESISTANCE

## Analysis Report



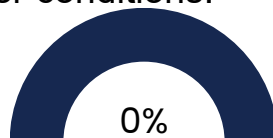
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### INTRODUCTION

The hail impact resistance test evaluates a shingle's ability to withstand impact from hailstones without cracking, puncturing, or losing granules. Shingles with high hail impact resistance are especially valuable in regions prone to severe storms, as they help reduce the risk of roof damage and minimize the need for costly repairs after hail events.

### CONCLUSION

- During testing on 10-year-old shingles, the untreated shingles showed visible damage and granule loss at the points of impact, leading to failure of the test. However, the treated shingles displayed remarkable durability. There was **no granule loss** where the hailstones struck, and **no damage** was observed on the treated shingles. As a result, the treated shingles passed the hail impact test, demonstrating that can significantly improve the resilience of older shingles, helping them withstand severe weather conditions.



**Granule Loss on Treated Shingles**