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Evaluation of Nature's Infill Material: Untreated Nature’s Infill v. Nature’s Infill T3

1.0 Introduction

1.1 Objective:

This report evaluates the performance of treated Nature’s Infill (Nature’s Infill T3) compared to the untreated control sample, focusing on mold/fungal growth inhibition, water absorption, and material stability. The study was conducted to address specific client questions regarding the effectiveness of the treatment in enhancing the material’s properties for practical applications.

1.2 Background:

Nature’s Infill is used as a vegetal based synthetic turf infill material for in various applications. However, untreated vegetal infill materials can be prone to mold/fungal growth and water absorption, which can impact their performance. This study examines whether the treated sample’s coating improves resistance to these challenges.

1.3 Key Findings:

- The untreated control sample exhibited visual evidence of fungal growth within 48 hours, with complete surface coverage by Day 5, alongside substantial water absorption and volume increase.
- In contrast, the treated sample (Nature’s Infill T3) showed minimal mold growth, limited water absorption, and maintained stability in granular form throughout the study.

2.0 Materials and Methods

2.1 Samples:

- Control Sample: Untreated Nature’s Infill
- Treated Sample: Nature’s Infill T3

2.2 Procedure:

- All testing was conducted under standardized laboratory conditions to ensure consistent results.
- Petri dishes and tools were sanitized before use to minimize contamination.
- 60mL (cc) of each infill sample was mixed with 60mL (cc) of distilled water.
- The mixtures were placed in sanitized glass petri dishes without lids to simulate exposure to ambient air conditions and stored in a fume hood for the duration of the study and observation period. The fume hood served as a partial enclosure, allowing air flow and ambient conditions while providing an isolated testing area partitioned off from potential contaminants.
- The samples were observed over an eight-day period to visually monitor changes in fungal growth, water absorption and material behavior.
- Daily photographs were taken to document the progression of changes.

2.3 Qualitative Outcomes:

- Mold/Fungal Growth: Visual inspection of fungal presence and coverage over time.
- Water Absorption: Assessment of changes in material volume and water retention.
- Material Stability: Observations of structural changes or degradation in the samples.

3.0 Results – Mold/Fungal Growth Study

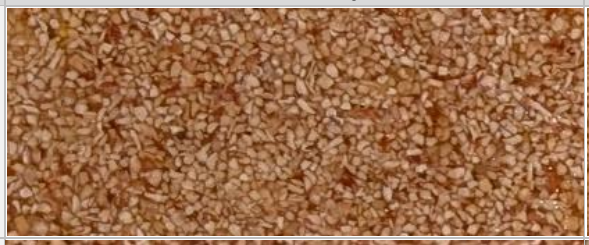
3.1 Control Sample Observations:

- Growth observed within 48 hours (30-40% coverage) and complete coverage by Day 5.

3.2 Treated Sample Observations (Nature's Infill T3):

- Minimal growth observed on Day 5 with limited coverage.

Table 1. Mold/Fungal Growth Study – Close-Up, Top-View Photos

Time Elapsed	Control Sample	Treated Sample (Nature's Infill T3)
0 Hours		
24 Hours		
48 Hours		
72 Hours		
96 Hours		
192 Hours		

4.0 Results – Water Absorption Study

4.1 Control Sample Observations:

- Total water absorption and volume increase in material.

4.2 Treated Sample Observations (Nature's Infill T3):

- Minimal water absorption and stable material volume.
- No significant changes or alterations in granular form.

Table 2. Water Absorption Study – Close-Up, Side-View Photos

Time Elapsed	Control Sample	Treated Sample (Nature's Infill T3)
0 Hours		
24 Hours		
48 Hours		
72 Hours		
96 Hours		
192 Hours		

Note: The dark color on the top plane of the material is due to shadowing from the location of the light source.

5.0 Discussion

The untreated control sample exhibited significant fungal growth and increased material volume due to water absorption, with nearly complete fungal coverage by Day 5. In contrast, the treated sample, Nature's Infill T3, showed minimal fungal growth and maintained its granular structure with limited water absorption. These findings indicate a clear distinction in performance between the treated and untreated samples under identical conditions.

Cellulose-rich substances—such as corn, soy-based products, hard and soft wood chips, walnut shells, hemp, and coconut husks—naturally undergo decomposition due to microbial enzymatic activity. However, the treatment applied to Nature's Infill T3 appears to create an environment less conducive to microbial growth and enzymatic breakdown. This treatment may help reduce the risk of mold development and slow the natural decomposition process typically observed in untreated cellulose-based materials.

The results suggest that the treatment effectively reduces fungal growth and moisture retention compared to the untreated sample. While Nature's Infill T3 demonstrated enhanced resistance, additional quantitative studies may further assess its long-term performance across varying environmental conditions.

Overall, the findings confirm the efficacy of the treatment in improving the material's resistance to moisture and microbial growth, enhancing its suitability for use in environments where fungal contamination and moisture absorption are concerns.

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