



TESTING TECHNOLOGY FOR SPORT

Infill Study

TTII Nature's Infill T3

Report Number: 96460/7987

Report Status: Final

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Laboratory Study

Report Number	96460/7987	Report Date	12/09/2024
Sample Type	Organic Infill	Test Date	11/25/2024
Material Description	TTII Nature's Infill T3		
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	Laboratory Manager		
Checked by	Kieran O'Donnell		
	Director		

Introduction:

The tests conducted included particle size distribution, mold testing, freeze-thaw stability, and bulk density. Both macro and micro photographs were taken for visual observation and comparison.

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Foreword

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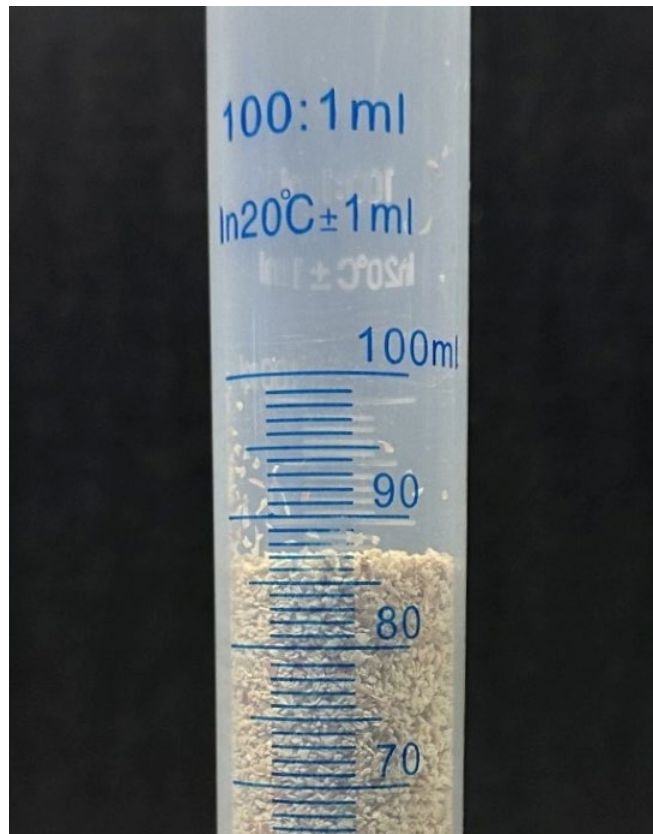
1 - Information

Bulk density is a fundamental property of particulate materials. It is calculated by dividing the mass of a sample by the total volume it occupies. In the Sports Labs Laboratory, this test involves using a 30-gram sample of infill, which is placed into a graduated cylinder. The recorded volume from the cylinder includes the volume of the granulated particles, as well as the inner particle voids and internal pore spaces. Accurate measurement of bulk density is crucial for determining the appropriate amount of material required to effectively infill a turf system.

2 – Bulk Density Results

Material Tested	g	cm ³	g/cm ³	lb/ft ³	Lbs per 1/4"	Depth per lb.
TII Nature's Infill T3	30	87	0.34	21.53	0.449	0.557

3 – Bulk Density Photo





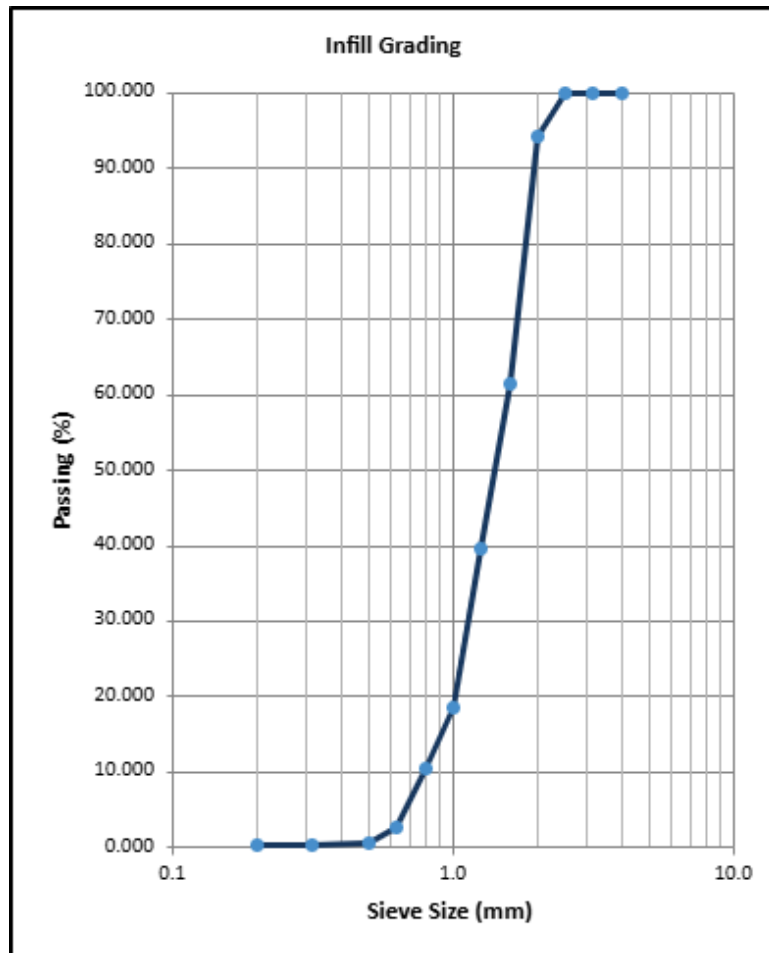
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4 - Particle Size Distribution Chart

Particle Size Distribution Chart				
Performance Infill Name		TTII Nature's Infill T3		
Sieve Size (mm)	Weight (g)	Retained (%)	Passing (%)	Maximum Mass Allowed
4.00	0.0	0.0	100.0	314
3.150	0.0	0.0	100.0	279
2.500	0.0	0.0	100.0	248
2.000	2.9	5.8	94.2	222
1.600	16.3	32.6	61.6	199
1.250	11.0	22.0	39.6	176
1.000	10.5	21.0	18.6	157
0.800	4.0	8.0	10.6	140
0.630	4.0	8.0	2.6	125
0.500	0.97	1.9	0.7	111
0.315	0.1	0.2	0.5	88
0.200	0.0	0.0	0.5	70
Passing to Base Tray	0.0	0.0	0.5	--
% Loss Check	0.46	≤ 1.0% Requirement		

5 – Particle Size Distribution Graph



Particle Size Range:	0.800-2.000mm
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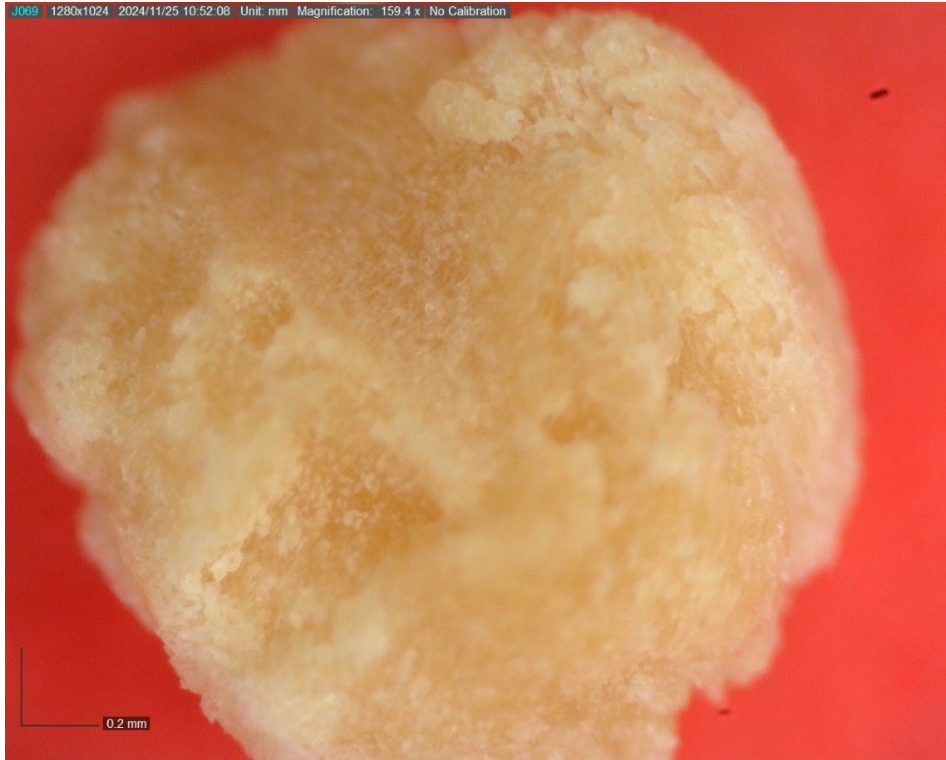
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6 – Particle Size Distribution Chart - ASTM D5644 Method A

Particle Size Distribution Chart			
Performance Infill Name		TTII Nature's Infill T3	
ASTM Mesh Size	Retained (g)	Passing (g)	% Retained
10	36.61	36.53	17.5
12	52.73	52.62	25.2
14	44.40	44.30	21.2
16	21.15	21.10	10.1
18	18.03	17.99	8.6
20	14.83	14.80	7.1
25	10.69	10.67	5.1
30	7.33	7.31	3.5
35	2.09	2.09	1.0
40	0.35	0.35	0.2
50	0.14	0.14	0.1
100	0.0	0.20	0.1
Pan	0.00	0.00	0.0
% Retained	208.54	208.08	99.7

Particle Size Range:	10-18
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7 - Micro Photos



8 - Macro Photos



9 - Freeze Thaw

To evaluate the effects of freeze-thaw cycles on a specified infill, the following procedure was implemented: Each infill sample was subjected to consecutive intervals of freezing temperatures followed by thawing to ambient conditions (72.5°F). The testing utilized a thermal testing chamber, 70mm Petri dishes, a microscopic camera, a graduated cylinder, and a pipette dropper. The temperature chamber was set to 0°F. Samples were saturated with 100 milliliters of water and exposed to the low temperature for 8 hours. After each 8-hour interval, the samples were removed from the chamber and allowed to thaw to room temperature. Once thawed, the samples were inspected under a microscope to assess any fracturing resulting from the expansion and contraction of water during the freeze-thaw cycle. Each sample was re-saturated with 100 milliliters of water before being returned to the temperature chamber. This process was repeated for a total of 48 hours of freeze-thaw cycles.

Pre-Test



Post-Test



After testing there were no apparent changes to the physical properties of the sample material.

10 – Mold Testing

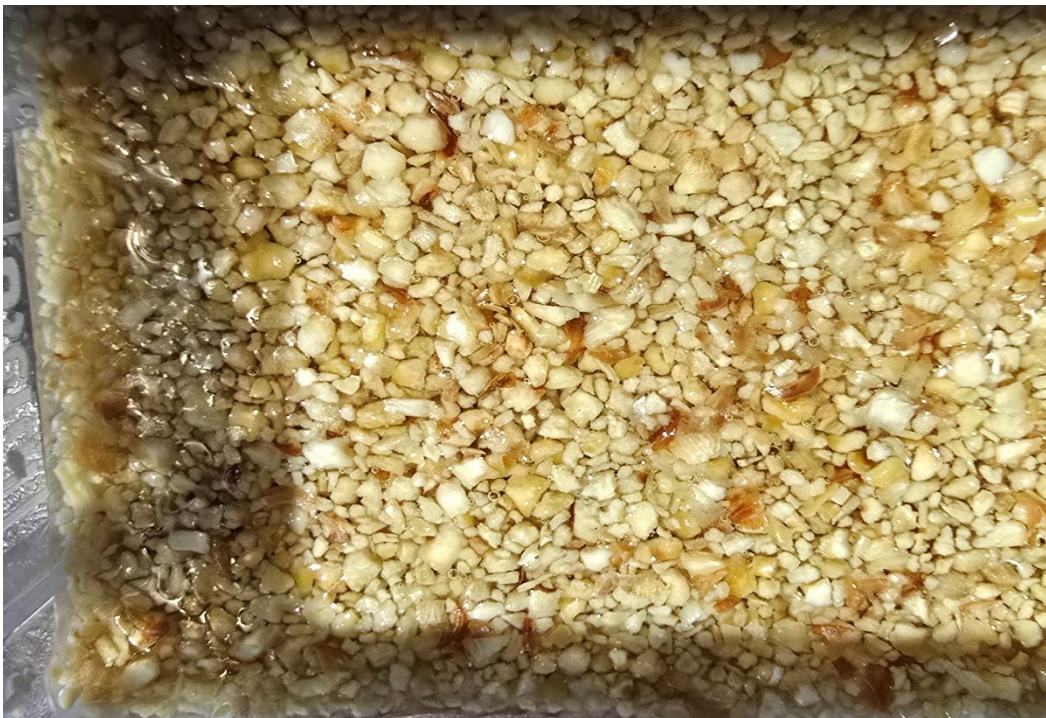
Fresh – Room Temperature



Post - 24 hours – Room Temperature



Post - 4 Days – Room Temperature





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Conclusion –

In addition to exposing the sample to indoor conditions the sample was also exposed to outdoor conditions and no signs of mold were seen.

End of Study