LABORATORY TESTING
PERFORMANCE EVALUATION

Project Information

Project Name	Nature's Infill and Rubber System Comparison Exposure to Simulated Wear		
Client Information	Target Technologies International Inc 8535 Eastlake Drive Burnaby BC V5A4T7		
Date	7/19/2023	**Sample Arrival**	6/2023
Report Status	Final	**Test Date(s)**	6/16/2023-7/18/2023
Job No.	98473/8669		
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Checked by	*Jeffrey Gentile* *Operations Director*		

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Summary

The purpose of this evaluation was to study and analyze synthetic turf systems under simulated wear conditions. The main objectives were:

- Assess Turf Systems: The evaluation aimed to understand how different turf systems (combinations of turf types, infill materials, and construction methods) perform under conditions that simulate wear. This information helps in determining the durability and longevity of the turf system.
- Compare Infill Characteristics: The evaluation sought to compare the characteristics of the infill material before and after undergoing 20,000 cycles of Lisport simulated wear. Measurements of the infill material's particle size distribution were recorded before and after the Lisport procedure.
- Infill Depth and Photo Documentation: Throughout the evaluation, infill depths were measured, and photos were taken at 5,000 cycle intervals. Monitoring the infill depth allows for observations of how the infill settles and compacts over time. Photos provide visual documentation of the turf's condition at different stages of the wear simulation, aiding in the assessment and comparison of turf system performance.

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General Information

Test Date(s)	6/16/2023-7/18/2023	**Air Temperature (°F)**	70-73
Technician	AK, FP	**Humidity (%)**	44-46

Test Methods

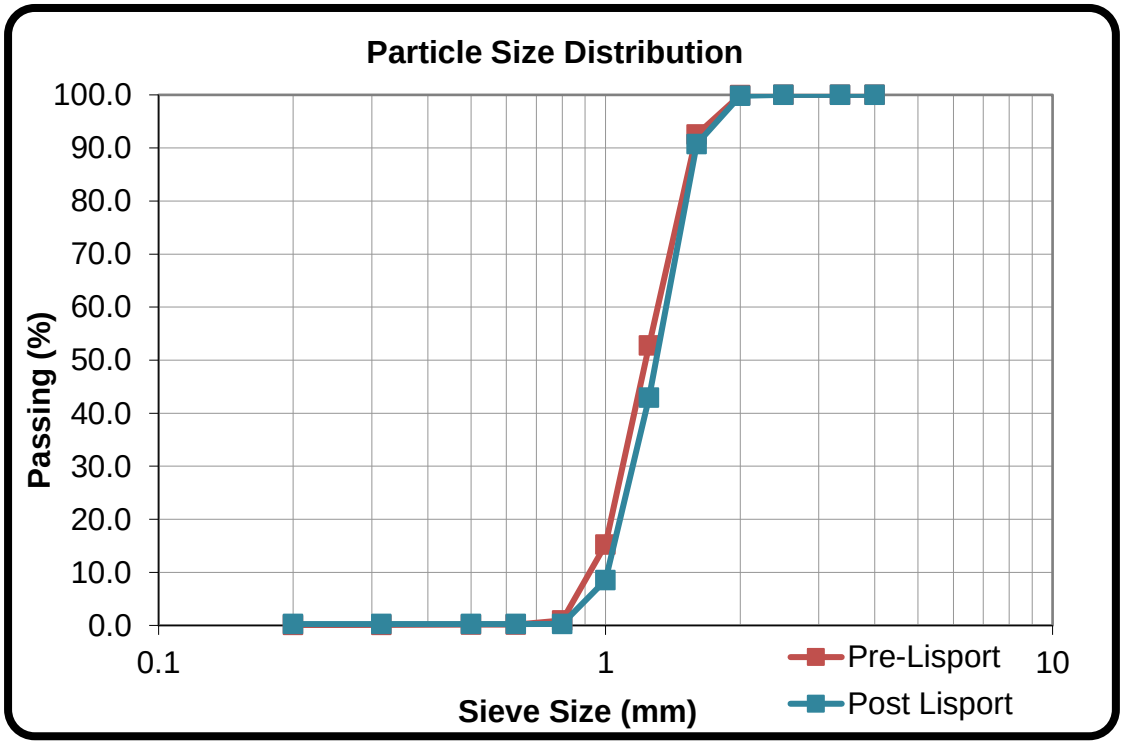
Test Type	Test Method	Test Description
Simulated Wear	**EN 15306**	Surfaces for outdoor sports areas – Exposure of synthetic turf to simulated wear
Infill Depth	**EN 1969**	Surfaces for sports areas – Determination of thickness of synthetic sports surfaces
Particle Size Distribution	**EN 933-1**	Tests for Geometrical Properties of Aggregates – Part 1: Determination of Particle Size Distribution – Sieving Method

System Information

System 1			System 2
Turf Product	2" Dual Fiber	**Turf Product**	2" Dual Fiber
Performance Infill	1.5 lb/sf Nature's Infill	**Performance Infill**	1.5 lb/sf Rubber
Stabilizing Infill	5 lb/sf Sand	**Stabilizing Infill**	5 lb/sf Sand
Shockpad	None	**Shockpad**	None

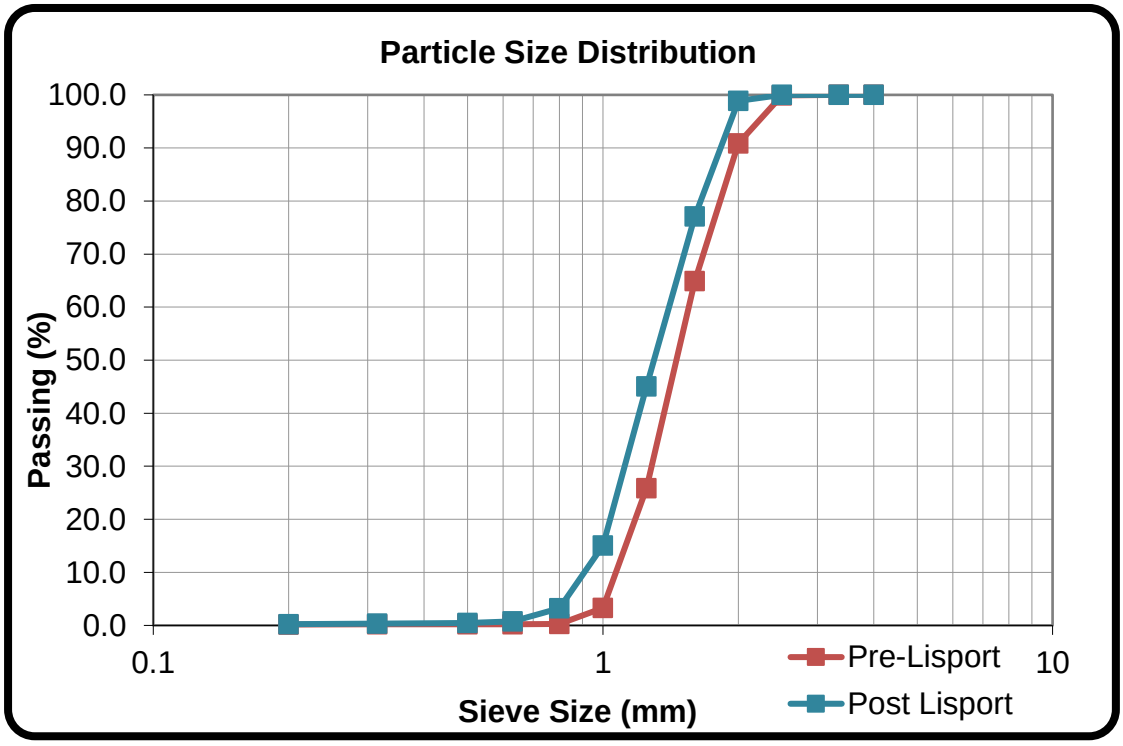
Nature's Infill Particle Size Distribution Comparison

Particle Size Distribution for Nature's Infill				
Pre-Lisport		Passing % Variation	Post Lisport	
Sieve Size	Passing (%)		Sieve Size	Passing (%)
No. 5	100.0	0.0	No. 5	100.0
No. 6	100.0	0.0	No. 6	100.0
No. 8	100.0	0.0	No. 8	100.0
No. 10	100.0	0.1	No. 10	99.8
No. 12	92.5	1.8	No. 12	90.7
No. 16	52.7	9.8	No. 16	42.9
No. 18	15.3	6.7	No. 18	8.5
No. 20	0.9	0.6	No. 20	0.3
No.30	0.2	0.1	No.30	0.3
No. 35	0.1	0.1	No. 35	0.3
No. 50	0.1	0.2	No. 50	0.3
No. 70	0.1	0.2	No. 70	0.3



Rubber Particle Size Distribution Comparison

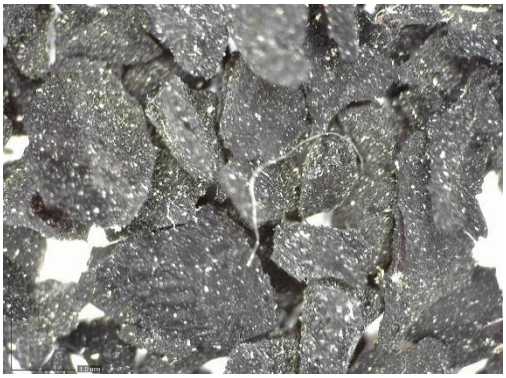
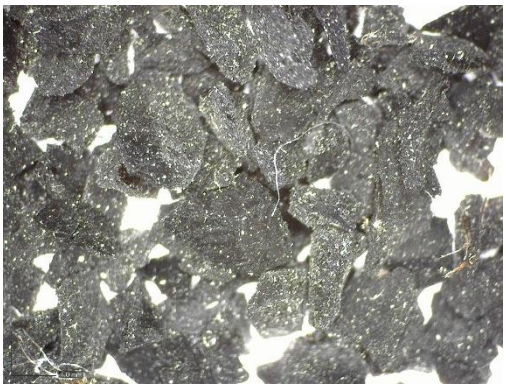
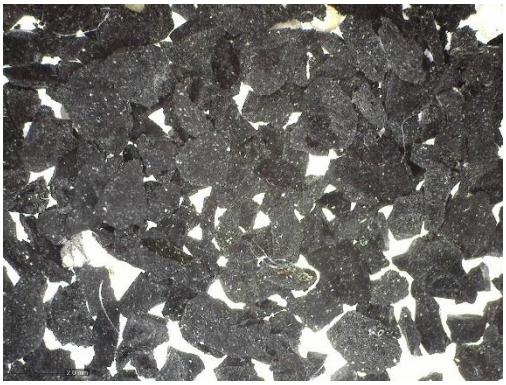
Particle Size Distribution for Rubber				
Pre-Lisport		Passing % Variation	Post Lisport	
Sieve Size	Passing (%)		Sieve Size	Passing (%)
No. 5	100.0	0.0	No. 5	100.0
No. 6	100.0	0.0	No. 6	100.0
No. 8	99.9	0.1	No. 8	100.0
No. 10	90.8	8.0	No. 10	98.9
No. 12	64.9	12.2	No. 12	77.1
No. 16	25.8	19.2	No. 16	45.1
No. 18	3.3	11.8	No. 18	15.0
No. 20	0.3	3.0	No. 20	3.3
No.30	0.2	0.5	No.30	0.7
No. 35	0.2	0.3	No. 35	0.5
No. 50	0.2	0.2	No. 50	0.4
No. 70	0.2	0.1	No. 70	0.2



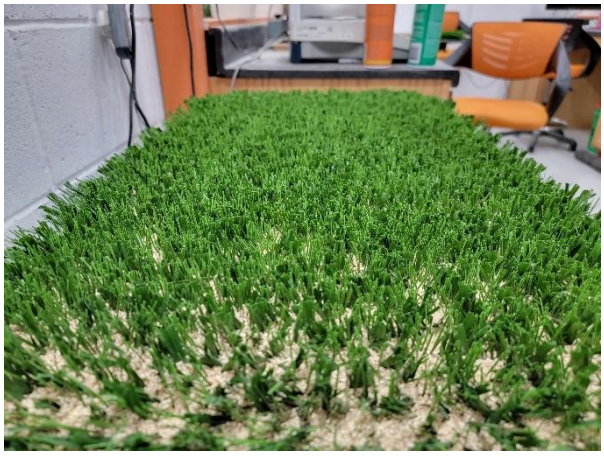
Pre-Simulated Wear Infill Photos

	Nature's Infill	Rubber
50x Magnification		
35x Magnification		
20x Magnification		

Post Simulated Wear Infill Photos

	Nature's Infill	Rubber
50x Magnification		
35x Magnification		
20x Magnification		

0 Cycles Results

Infill Depth: 35mm	Infill Depth: 35mm
	
	
	

5000 Cycles Results

Infill Depth: 33mm	Infill Depth: 34mm
	
	
	

10000 Cycles Results

Infill Depth: 31mm	Infill Depth: 32mm
	
	
	

15000 Cycles Results

Infill Depth: 30mm	Infill Depth: 29mm
	
	
	

20000 Cycles Results

Infill Depth: 28mm	Infill Depth: 28mm
	
	
	

Discussion

The purpose of this evaluation was to assess two turf systems under simulated wear conditions and compare characteristics of infill samples before and after undergoing 20,000 cycles of lisport simulated wear. Both turf systems were built using identical quantities and components, with the only differing variable being the performance infill material. This controlled approach ensures that any observed differences in performance can be directly attributed to the specific characteristics of the infill material used in each system. Results of particle size distribution were recorded before and after the lisport procedure and infill depths and photos were taken at 5,000 cycle intervals.

Based on the results and observations of this assessment, it appears that both Nature's infill and SBR rubber performed similarly well with little to no distinction in terms of material loss, compaction, and breakdown in the synthetic turf system. The pre and post particle size distribution of the materials showed no significant change in size. Additionally, at the macro level, there were no visual changes in the Nature's Infill material during the simulated wear evaluation, indicating its resilience to breakdown under this type of wear test.

For this assessment, SBR rubber was used as a comparison to Nature's Infill. Rubber is often used as a comparison because of its known ability to perform well in such tests, further highlighting the comparable performance of Nature's infill. Considering the resulting data and the similar resilience demonstrated by Nature's Infill and SBR rubber, it can be concluded that Nature's Infill holds up well under the Lisport simulated wear conditions and shows very little to no material breakdown during the testing process under these specific test conditions.

End of Report