TEST REPORT

Laboratory evaluation of an infill material for artificial turf system

Tests performed according to EN 15306 and EN 12235 standards

Report Number	**R22647CAN-A1**
Product	**TTII CRYSTAL BRIGHT** Target Technologies International Inc.
Client	**John B. Giraud** Target Technologies International Inc., 8535 Eastlake Drive, Burnaby, BC V5A 4T7
Date	**December 01st, 2022**

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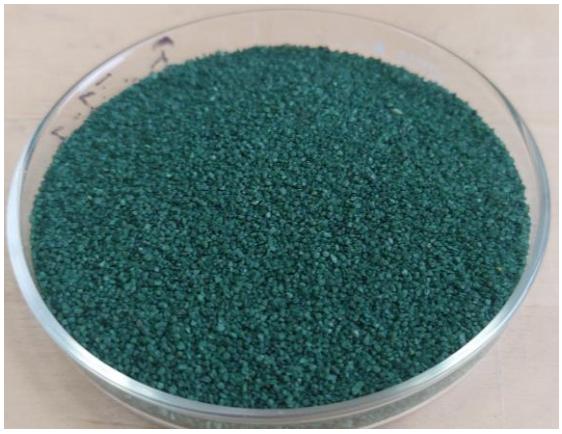
INFORMATION

Product description	**Synthetic Turf System filled with stabilising infill: green coated sand**			
Name	**Generic Turf 1.75”**		**TTII CRYSTAL BRIGHT**	
Sample Number	**US00365 sample**		**CAN004673**	
Date of reception	**November 1st 2022**			
Date of the tests	**November-December 2022**			
Temperature	**Min**	**73°F** *(23°C)*	**Max**	**75°F** *(24°C)*
Humidity	**Min**	**48 %RH**	**Max**	**50 %RH**
Configuration tested				
Name of the turf	**Generic turf** *(monofilament/fibrillated)*			
Pile length	**1.75’’** *(45 mm)*			
Sand quantity	**4.2 lb/ft²** *(20.3 kg/m²)*			
Infill depth measured	**1.0’’** *(25 mm)*			

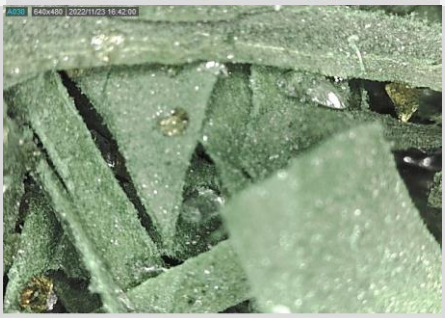
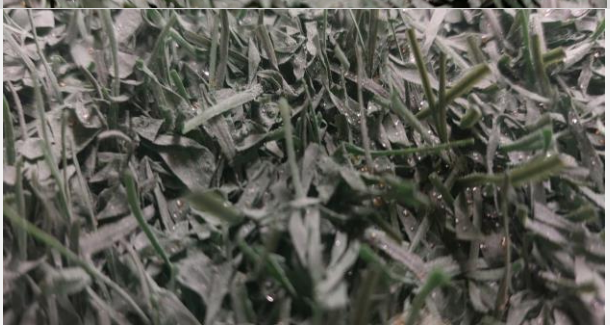
US00365 sample – Generic turf



CAN004673 – TTII CRYSTAL BRIGHT

System general view

RESULTS - Simulated wear – Lisport 20,000 cycles – Pictures:

Exposure	General view	Close-up
0 cycle *(before Lisport wearing)*		
5,000 cycles		
10,000 cycles		
15,000 cycles		
20,000 cycles		

Simulated wear – Lisport 20,000 cycles – Measurements:

EN 15306 Standard Lisport simulated wear was performed including measurements every 2,500 cycles as per:
- Infill depth measurements were taken using 3 prong infill depth gauge following EN 1969 standards
- Infill dispersed out of the sample was weighted and replaced into the system
- Free pile length was measured using a glass prism gauge
- Flattening percentage calculated from total pile length of the turf product
- Wearing levels 1 to 5 determined by Labosport technical team

Exposure	Free pile	Yarn flattening	Tuft Loss	Infill Dispersion		Infill depth	Compaction
0 cycles	*20 mm*	*0%*	*0*	*0*	*n/a*	*25 mm*	*0%*
2,500 cycles	**20 mm**	**4%**	**0**	**50 g**	**769%**	**23 mm**	**8%**
5,000 cycles	**21 mm**	**2%**	**0**	**0 g**	**0%**	**23 mm**	**8%**
7,500 cycles	**20 mm**	**7%**	**0**	**0 g**	**0%**	**22 mm**	**12%**
10,000 cycles	**19 mm**	**13%**	**0**	**0 g**	**0%**	**20 mm**	**20%**
12,500 cycles	**18 mm**	**16%**	**0**	**0 g**	**0%**	**20 mm**	**20%**
15,000 cycles	**18 mm**	**18%**	**0**	**0 g**	**0%**	**19 mm**	**24%**
17,500 cycles	**17 mm**	**20%**	**0**	**0 g**	**0%**	**19 mm**	**24%**
20,000 cycles	**17 mm**	**20%**	**0**	**0 g**	**0%**	**19 mm**	**24%**

Levels : 1: none / 2: light / 3: moderate / 4: important / 5: high

Comments:

Yarn flattening and tuft loss results showed **no negative effect of the infill to the turf fibers**. The rotation of the studded rollers caused a **light to almost null infill dispersion** at the end of the 20k cycles. The infill material tested here tends to increase the **compaction to an important level reaching the end of the Lisport testing**. Similar compaction levels and yarn flattening are commonly observed on turf installations after 8 to 10 years of utilization with a light maintenance progamme.

Performance testing (after 20,000 cycles Lisport) on a EPP 14 mm shock pad:

Property	Method *(units)*	Results	Recommended range*	Pass/Fail
Shock Absorption	**ASTM F3189 / EN 16717 *(%)***	**62**	**55 – 70%**	**Pass**
Vertical Deformation	**ASTM F3189 / EN 16717 *(mm)***	**7.3**	**4.0 – 10.0 mm**	**Pass**
Rotational resistance	**EN 15301-1 *(N.m)***	**43**	**25 – 50 N.m**	**Pass**
Infill depth	**EN 1969 *(mm)***	**19**	**-**	**-**
G_{max} / Impact attenuation	**ASTM F355 *(G)***	**110**	**< 165 G**	**Pass**
Vertical Ball Rebound	**EN 12235 (m)**	**0.92**	**0.60 – 1.00**	**Pass**

**Recommendations are based on FIFA Quality requirements and STC recommendations for Gmax testing*

REPORTED BY

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