

TEST REPORT

Laboratory tests on an infill material for artificial turf system

Tests performed according to DIN 18035-7**, EN 71-3**, ASTM F3496** and EPA 6020ICP/MS standards**

Report Number R22637CAN-E1

Product

TTII SafeGuard Colour Coated Green Infill
Target Technologies International Inc.

Client

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Date

February 09th, 2023

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***Testing sub-contracted to a third party company.*

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INFORMATION

Product description	Performance infill for synthetic turf system			
Product name	TTII SafeGuard Colour Coated Green Infill			
Product type	Coated granule			
Sample Number	CAN004672			
Date of reception	November 1 st 2022			
Date of tests	November 2022			
Temperature	MIN	22°C	MAX	24°C
Humidity	MIN	49 %	MAX	51 %



General View



Microscopic View

RESULTS

Toxicological analysis of heavy metals – CAM 17:

Element	Units	Test method	Results	Requirements	Pass/Fail
Antimony	mg/kg	EPA 6020ICP/MS	< 0.250	< 500	Pass
Arsenic	mg/kg	EPA 6020ICP/MS	< 0.250	< 500	Pass
Barium	mg/kg	EPA 6020ICP/MS	7.820	< 10 000	Pass
Beryllium	mg/kg	EPA 6020ICP/MS	< 0.250	< 75	Pass
Cadmium	mg/kg	EPA 6020ICP/MS	< 0.250	< 100	Pass
Chromium	mg/kg	EPA 6020ICP/MS	0.736	< 500	Pass
Lead	mg/kg	EPA 6020ICP/MS	2.740	< 1 000	Pass
Selenium	mg/kg	EPA 6020ICP/MS	< 0.250	< 100	Pass
Silver	mg/kg	EPA 6020ICP/MS	< 0.250	< 500	Pass
Mercury	mg/kg	EPA 6020ICP/MS	< 0.250	< 20	Pass
Cobalt	mg/kg	EPA 6020ICP/MS	< 0.250	< 8 000	Pass
Copper	mg/kg	EPA 6020ICP/MS	25.500	< 2 500	Pass
Zinc	mg/kg	EPA 6020ICP/MS	21.000	< 5 000	Pass
Molybdenum	mg/kg	EPA 6020ICP/MS	< 0.250	< 3 500	Pass
Nickel	mg/kg	EPA 6020ICP/MS	0.363	< 2 000	Pass
Thallium	mg/kg	EPA 6020ICP/MS	< 0.250	< 700	Pass
Vanadium	mg/kg	EPA 6020ICP/MS	< 1.250	< 2 400	Pass

*limits taken from the California Code Of Regulations - §66261.24

Toxicological analysis of heavy metals by leachate – DIN 18035-7:

Parameters	Units	Test method	Results	DIN 18035-7 Requirements	Pass/Fail
Lead (Pb)	mg/L	DIN 18035-7	0.02	≤ 0.040	Pass
Cadmium (Cd)	mg/L	DIN 18035-7	< 0.001	≤ 0.005	Pass
Total Chromium (Cr)	mg/L	DIN 18035-7	< 0.01	≤ 0.050	Pass
Tin (Sn)	mg/L	DIN 18035-7	< 0.005	≤ 0.050	Pass
Chromium (Cr VI)	mg/L	DIN 18035-7	< 0.008	≤ 0.008	Pass
Mercury (Hg)	µg/L	DIN 18035-7	< 0.015	≤ 1	Pass
Zinc (Zn ²)	mg/L	DIN 18035-7	0.089	≤ 0.50	Pass
COD	mg/L	DIN 18035-7	20	≤ 40	Pass
EOX	mg/kg MS	DIN 18035-7	36	≤ 100	Pass

Toxicological analysis of heavy metals by migration – EN 71-3:

Element	Units	Test method	Results	EN 71-3 Requirements (Material of Category III)	Pass/Fail
Aluminium (Al)	mg/kg DW	EN 71-3	45	< 70 000	Pass
Antimony (Sb)	mg/kg DW	EN 71-3	< 0.005	< 560	Pass
Arsenic (As)	mg/kg DW	EN 71-3	< 0.05	< 47	Pass
Barium (Ba)	mg/kg DW	EN 71-3	3.4	< 18 750	Pass
Boron (B)	mg/kg DW	EN 71-3	1.95	< 15 000	Pass
Cadmium (Cd)	mg/kg DW	EN 71-3	0.15	< 17	Pass
Cobalt (Co)	mg/kg DW	EN 71-3	0.05	< 130	Pass
Copper (Cu)	mg/kg DW	EN 71-3	1.85	< 7 700	Pass
Lead (P)	mg/kg DW	EN 71-3	3	< 160	Pass
Manganese (Ma)	mg/kg DW	EN 71-3	5	< 15 000	Pass
Mercury (Hg)	mg/kg DW	EN 71-3	< 0.00075	< 94	Pass
Nickel (Ni)	mg/kg DW	EN 71-3	0.25	< 930	Pass
Selenium (Se)	mg/kg DW	EN 71-3	< 0.025	< 460	Pass
Strontium (Sr)	mg/kg DW	EN 71-3	1.45	< 56 000	Pass
Tin (Sn)	mg/kg DW	EN 71-3	< 0.25	< 180 000	Pass
Zinc (Zn)	mg/kg DW	EN 71-3	11.5	< 46 000	Pass
Chromium Total	mg/kg DW	EN 71-3	0.5	< 37.5	Pass
Chromium (Cr III)	mg/kg DW	EN 71-3	0.5	< 460	Pass
Chromium (Cr VI)	mg/kg DW	EN 71-3	< 0.053	< 0.2	Pass

Toxicological analysis of polycyclic aromatic hydrocarbons (PAHs) – ASTM F3496:

Elements	Units	Method	Results	Requirements	Pass/Fail
Benzo (a) pyrene	mg/kg	ASTM F3496	< 0.02	-	-
Benzo (e) pyrene	mg/kg	ASTM F3496	< 0.02	-	-
Benzo (a) anthracene	mg/kg	ASTM F3496	< 0.02	-	-
Chrysene	mg/kg	ASTM F3496	< 0.02	-	-
Benzo (j+b) fluoranthene	mg/kg	ASTM F3496	< 0.02	-	-
Benzo (k) fluoranthene	mg/kg	ASTM F3496	< 0.02	-	-
Dibenzo (a,h) anthracene	mg/kg	ASTM F3496	< 0.02	-	-
HAP (sum)	mg/kg	ASTM F3496	< 0.14	< 20	Pass

NOTE: To comply with ASTM F3496 standards, the sum of the 7 PAHs above needs to be below 20 mg/kg.

Therefore, TTII SAFEGUARD COLOURED INFILL is **compliant** with the ASTM F3496 standards.

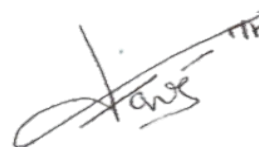
Toxicological analysis of phtalates:

Element	Units	Test method	Results	REACH Annex XVII entry 51	Pass/Fail
Dimethylphtalate	mg/kg	DIN 18035-7	< 1	-	-
Diethylphtalate	mg/kg	DIN 18035-7	< 1	-	-
Di-iso-butylphtalate	mg/kg	DIN 18035-7	< 1	< 1000	Pass
Di-n-butylphtalate	mg/kg	DIN 18035-7	< 1	< 1000	Pass
Bis-(2-methoxyethyl)phtalate	mg/kg	DIN 18035-7	< 1	-	-
Benzyl-butylphtalate	mg/kg	DIN 18035-7	1.3	< 1000	Pass
Bis-(2-ethylhexyl)phtalate	mg/kg	DIN 18035-7	< 1	< 1000	Pass
Di-n-octylphtalate	mg/kg	DIN 18035-7	< 1	-	-
DI-iso-nonylphtalate	mg/kg	DIN 18035-7	< 1	-	-
Di-iso-decylphtalate	mg/kg	DIN 18035-7	< 1	-	-
Phtalates – Total sample	mg/kg	DIN 18035-7	< 10.3	-	-

REPORTED BY



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