

TEST REPORT

Laboratory tests on an infill material for artificial turf system

Tests performed according to the standards listed in the quote Q22411CAN

Report Number **R22411CAN-B1**

Product **TTII CRYSTAL BRIGHT INFILL**

Client **John B. Giraud**
Target Technologies

Date **June 08th, 2022**

This report contains 5 pages in total. Reproduction of this report is authorized only in its entire form. Results reported are valid only for the products tested. To declare the conformity (or not), the uncertainty of the results was not taken into account. Detailed results are available on request.

LABOSPORT, THE WORLD LEADING SPORTS SURFACES EXPERT

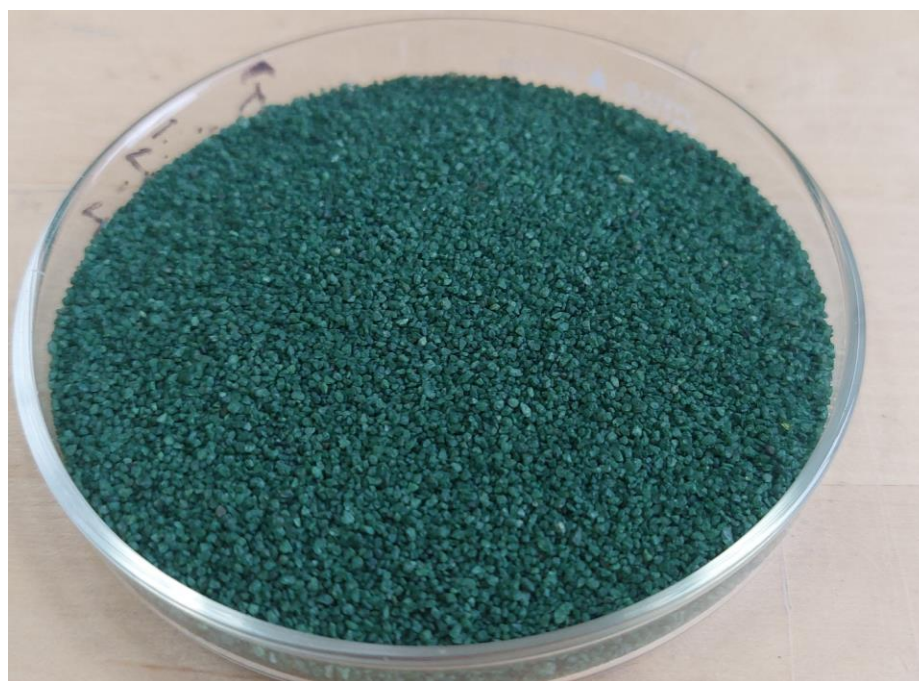
LABOSPORT CANADA • contact@labosport.com • (514) 277-9111
5661 Rue De Lanaudière • Montréal • Québec • H2G 3A5 • Canada

www.labosport.com



INFORMATION

Product description	Performance infill for synthetic turf system			
Product name	TTII Crystal Bright			
Product type	Coated sand			
Sample Number	CAN004451			
Date of reception	April 2022			
Date of tests	April – May 2022			
Temperature	MIN	22°C	MAX	24°C
Humidity	MIN	49 %	MAX	51 %



General View

RESULTS

Toxicological analysis of heavy metals – CAM 17:

Element	Units	Test method	Results	Requirements	Pass/Fail
Antimony	mg/kg	EPA 6020B	< 0.250	< 500	Pass
Arsenic	mg/kg	EPA 6020B	0.754	< 500	Pass
Barium	mg/kg	EPA 6020B	67.7	< 10 000	Pass
Cadmium	mg/kg	EPA 6020B	< 0.250	< 100	Pass
Chromium	mg/kg	EPA 6020B	6.920	< 500	Pass
Lead	mg/kg	EPA 6020B	0.726	< 1 000	Pass
Selenium	mg/kg	EPA 6020B	< 0.250	< 100	Pass
Silver	mg/kg	EPA 6020B	< 0.250	< 500	Pass
Mercury	mg/kg	EPA 7471B	< 0.1	< 20	Pass
Beryllium	mg/kg	EPA 6020B	< 0.250	< 75	Pass
Cobalt	mg/kg	EPA 6020B	11.2	< 8 000	Pass
Copper	mg/kg	EPA 6020B	30.7	< 2 500	Pass
Zinc	mg/kg	EPA 6020B	4.8	< 5 000	Pass
Molybdenum	mg/kg	EPA 6020B	< 0.250	< 3 500	Pass
Nickel	mg/kg	EPA 6020B	20.6	< 2 000	Pass
Thallium	mg/kg	EPA 6020B	< 0.250	< 700	Pass
Vanadium	mg/kg	EPA 6020B	< 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	< 0.005	≤ 0.040	Pass
Cadmium (Cd)	mg/L	DIN 18035-7	< 0.001	≤ 0.005	Pass
Total Chromium (Cr)	mg/L	DIN 18035-7	0.015	≤ 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	0.02	≤ 1	Pass
Zinc (Zn ²)	mg/L	DIN 18035-7	0.018	≤ 0.50	Pass
COD	mg/L	DIN 18035-7	6.6	≤ 40	Pass
EOX	mg/kg MS	DIN 18035-7	< 20	≤ 100	Pass

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

Elements	Units	Method	Results	Requirements	Pass/Fail
Benzo (a) pyrene	mg/Kg	ASTM F3496	< 0.2	-	-
Benzo (e) pyrene	mg/Kg	ASTM F3496	< 0.2	-	-
Benzo (a) anthracene	mg/Kg	ASTM F3496	< 0.2	-	-
Chrysene	mg/Kg	ASTM F3496	< 0.2	-	-
Benzo (j+b) fluoranthene	mg/Kg	ASTM F3496	< 0.2	-	-
Benzo (k) fluoranthene	mg/Kg	ASTM F3496	< 0.2	-	-
Dibenzo (a,h) anthracene	mg/Kg	ASTM F3496	< 0.2	-	-
HAP (sum)	mg/Kg	ASTM F3496	< 1.4	< 20	Pass

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

Therefore, TTI CRYSTAL BRIGHT is **compliant** with the ASTM F3496 standards.

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	80	< 70 000	Pass
Antimony (Sb)	mg/kg DW	EN 71-3	< 0.05	< 560	Pass
Arsenic (As)	mg/kg DW	EN 71-3	< 0.05	< 47	Pass
Barium (Ba)	mg/kg DW	EN 71-3	4.2	< 18 750	Pass
Boron (B)	mg/kg DW	EN 71-3	0.75	< 15 000	Pass
Cadmium (Cd)	mg/kg DW	EN 71-3	< 0.05	< 17	Pass
Cobalt (Co)	mg/kg DW	EN 71-3	0.45	< 130	Pass
Copper (Cu)	mg/kg DW	EN 71-3	0.95	< 7 700	Pass
Lead (P)	mg/kg DW	EN 71-3	< 0.25	< 160	Pass
Manganese (Ma)	mg/kg DW	EN 71-3	7	< 15 000	Pass
Mercury (Hg)	mg/kg DW	EN 71-3	0.001	< 94	Pass
Nickel (Ni)	mg/kg DW	EN 71-3	0.85	< 930	Pass
Selenium (Se)	mg/kg DW	EN 71-3	< 0.25	< 460	Pass
Strontium (Sr)	mg/kg DW	EN 71-3	1	< 56 000	Pass
Tin (Sn)	mg/kg DW	EN 71-3	< 0.25	< 180 000	Pass
Zinc (Zn)	mg/kg DW	EN 71-3	0.9	< 46 000	Pass
Chromium Total	mg/kg DW	EN 71-3	0.4	< 37.5	Pass
Chromium (Cr III)	mg/kg DW	EN 71-3	≤ 0.4	< 460	Pass
Chromium (Cr VI)	mg/kg DW	EN 71-3	< 0.053	< 0.2	Pass

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	< 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	14	-	-
Di-iso-decylphtalate	mg/Kg	DIN 18035-7	5.3	-	-
Phtalates – Total sample	mg/Kg	DIN 18035-7	< 27.3	-	-

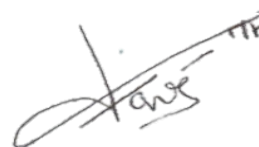
NOTE: Individual results should be compared to project requirements or local regulations.

For the phtalates for which REACH Annex XV entry 51 had requirements, individual results were analyzed and compared with the limits. Therefore, TTI CRYSTAL BRIGHT is **compliant** with REACH Annex XV entry 51 standards.

REPORTED BY



Laurent LACHAUSSÉE
(Laboratory Technician) - Writer



Maxime FAVÉ
(Laboratory Manager) – Writer/Approver