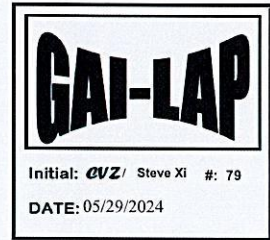




May 29th, 2024



Re: FINAL LABORATORY TEST REPORT

Dear Ms. Loaiza:

Thank you for consulting TRI Suzhou for your material testing needs.

Enclosed is the **final** laboratory report for the **Conformance** testing of **three (3) Nonwoven Geotextile** samples.

PROJECT NAME: Geotextile Testing

DATE REPORTED: May 29th, 2024

REFERENCE TRI JOB NO.: SCH24197

DATE RECEIVED: May 24th, 2024

SAMPLE(S) SENT BY:

SAMPLE IDENTIFICATIONS:

SAMPLE ID

GT 200P

GT 270P

GT 300P

TRI CONTROL NUMBER

11624

11625

11626

TESTS REQUIRED / PERFORMED:

TEST METHOD

1. ASTM D4632

2. ASTM D4595

3. ASTM D4833

4. ASTM D5261

DESCRIPTION

Grab Tensile

Wide Width Tensile

Puncture Resistance

Mass per Unit Area

TEST RESULTS: The test results are summarized in the attached Table(s) 1 to 3.

Respectfully,

TRI Geosynthetic Testing and Services (Suzhou) Co., Ltd.

Steve Xi
Quality Assurance

Chad Blackwell
General Manager

Signatures are on file

It shall be noted that the **sample/s** tested **is/are** believed to be true representatives of the material produced under the designation herein stated. In addition, the attached laboratory tests results are considered indicative only of the quality of samples/specimens that were actually tested. The appropriate test methods hereby employed are based on the current and accepted industry practices. TRI neither accepts responsibility for nor makes claims to the intended final use and purpose of the material. The test data and all associated project information shall be held confidential and not to be reproduced and/or disclosed to other parties except in full and with prior written approval from the client or any pertinent entity duly authorized by the respective client. It is our policy to keep physical records of each job for five (5) years commencing from the date of receipt of the samples and keep its corresponding electronic file for seven (7) years. **Retained conformance samples are disposed of after one (1) month.** On the other hand, should you need us to keep them at a longer period, please advise us in writing.

7 Pages Total (including this sheet)



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TABLE 1.

MATERIAL PROPERTIES

CLIENT:

PROJECT: Geotextile Testing

Date Received: 2024.05.24

Date Reported: 2024.05.29

Client Sample ID: GT200P

Material Description: Black Nonwoven Geotextile

QC'd By: *Steve/林. 强.*

TRI Job No.: SCH24197

TRI Control No.: 11624

SPECIMENS												Avg.	Std. Dev.	Min	Max
	1	2	3	4	5	6	7	8	9	10					
METHOD	DESCRIPTION														
ASTM D5261	Mass per Unit Area (gm/ m ²) Test Specimen Size : 4" x 8"														
	222.2	200.4	230.4	233.3	228.5							223.0	13.3	200.4	233.3
ASTM D4632	Grab Tensile Test was performed as directed in D4632, dry condition. CRE Type Tensile Testing Machine (YT010 P) with hydraulic action grips and 1 " x 2 " (25.4mmX 50.8mm) rubber faces was used. set for 12" (300 mm)/min constant rate of extension, with initial gauge length (distance between grips) of 3 "(76mm). Specimen size: 4" X 8 "(100 mmX200mm). Maximum load used for testing: 1000 lbs(5000N) Grab Breaking Load (N)														
	MD 706	781	892	908	794	807	842	973	1030	844		858	96	706	1030
	TD 846	876	761	847	880	1018	797	953	870	854		870	73	761	1018
	Apparent Breaking Elongation (percent)														
	MD 54	57	60	62	61	58	62	63	61	55		60	3	54	63
	TD 60	58	70	62	60	61	61	61	59	68		62	4	58	70
ASTM D4595	Wide-Width Strip Tensile Test was performed as directed in ASTM D4595, dry condition. CRE Type Tensile Testing Machine (YT010P) equipped with 2" x 8" (50mmX 200mm) Grips was used. set for 0.4" (10 mm/min) constant rate of extension, with initial gauge length (distance between grips) of 4"(100mm) Specimen Size: 8"X 8" (200mm X200mm). Full scale force range used for testing: 18000lbs (80000N) Tensile Strength (kN/m)														
	MD 16.3	14.7	13.4	13.8	13.6	12.4						14.0	1.3	12.4	16.3
	TD 15.8	16.5	16.1	15.8	15.6	16.5						16.0	0.4	15.6	16.5
	Elongation at Break (percent)														
	MD 58	53	55	52	54	49						54	3	49.4	58.3
	TD 55	60	51	54	51	53						54	3	50.8	60.1

(Continued on next page)

(Sheet 1 of 2)



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TABLE 1.

MATERIAL PROPERTIES

CLIENT:

PROJECT: Geotextile Testing

Date Received: 2024.05.24

Date Reported: 2024.05.29

Client Sample ID: GT200P

Material Description: Black Nonwoven Geotextile

QC'd By: *Steve / [Signature]*

TRI Job No.: SCH24197

TRI Control No.: 11624

SPECIMENS															
		1	2	3	4	5	6	7	8	9	10	Avg.	Std. Dev.	Min	Max
METHOD	DESCRIPTION														
ASTM D4833	Puncture Resistance (N)														
	Specimens were tested as directed in Test Method D4833. They were clamped without tension between circular plates of a ring clamp attachment secured in the tensile machine. Test specimens extended to or beyond the outer edges of the clamping plates.														
		585	505	467	632	432	447	511	623	512	563	525	63	432	632
		537	535	571	435	518									

End of Table 1

(Sheet 2 of 2)

By accepting the data and results presented on this report, the Client agrees to limit the liability of TRI SUZHOU from Client and all other related parties for any claims on issues, due to the use of this data, to the cost respective of the tests presented in this report; and the Client agrees to indemnify and hold harmless TRI SUZHOU from and against all liabilities in excess of the aforementioned limits.



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TABLE 2.

MATERIAL PROPERTIES

CLIENT:

PROJECT: Geotextile Testing

Date Received: 2024.05.24

Date Reported: 2024.05.29

Client Sample ID: GT270P

Material Description: Black Nonwoven Geotextile

QC'd By: *Steve/John B.*

TRI Job No.: SCH24197

TRI Control No.: 11625

SPECIMENS

	1	2	3	4	5	6	7	8	9	10	Avg.	Std. Dev.	Min	Max
METHOD	DESCRIPTION													
ASTM D5261	Mass per Unit Area (gm/ m ²) Test Specimen Size: 4" x 8"													
	241.1	254.2	253.2	247.9	258.5						251.0	6.7	241.1	258.5
ASTM D4632	Grab Tensile Test was performed as directed in D4632, dry condition. CRE Type Tensile Testing Machine (YT010 P) with hydraulic action grips and 1 " x 2 " (25.4mmX 50.8mm) rubber faces was used. set for 12" (300 mm)/min constant rate of extension, with initial gauge length (distance between grips) of 3 "(76mm). Specimen size: 4" X 8 "(100 mmX200mm). Maximum load used for testing: 1000 lbs(5000N) Grab Breaking Load (N)													
MD	837	933	897	933	969	862	876	806	964	885	896	54	806	969
TD	1103	1102	1041	1124	1003	1031	1141	1039	1080	1171	1083	54	1003	1171
	Apparent Breaking Elongation (percent)													
MD	61	62	63	64	67	67	68	67	61	69	65	3	61	69
TD	66	72	66	57	68	73	66	67	65	65	66	4	57	73
ASTM D4595	Wide-Width Strip Tensile Test was performed as directed in ASTM D4595, dry condition. CRE Type Tensile Testing Machine (YT010P) equipped with 2" x 8" (50mmX 200mm) Grips was used. set for 0.4" (10 mm/min) constant rate of extension, with initial gauge length (distance between grips) of 4"(100mm) Specimen Size: 8" X 8" (200mm X200mm). Full scale force range used for testing: 18000lbs (80000N) Tensile Strength (kN/m)													
MD	15.8	14.8	16.1	16.8	16.4	15.3					15.9	0.7	14.8	16.8
TD	20.4	21.4	20.8	20.5	19.5	20.3					20.5	0.6	19.5	21.4
	Elongation at Break (percent)													
MD	44	47	44	44	51	47					46	3	44.3	51.2
TD	46	54	53	49	48	51					50	3	45.8	53.8

(Continued on next page)

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TABLE 2.

MATERIAL PROPERTIES

CLIENT:

PROJECT: Geotextile Testing

Date Received: 2024.05.24

Date Reported: 2024.05.29

Client Sample ID: GT270P

Material Description: Black Nonwoven Geotextile

QC'd By: *Steve/Jan. 13.*

TRI Job No.: SCH24197

TRI Control No.: 11625

		SPECIMENS										Avg.	Std. Dev.	Min	Max
METHOD	DESCRIPTION	1	2	3	4	5	6	7	8	9	10				
ASTM D4833	Puncture Resistance (N) <i>Specimens were tested as directed in Test Method D4833. They were clamped without tension between circular plates of a ring clamp attachment secured in the tensile machine. Test specimens extended to or beyond the outer edges of the clamping plates.</i>														
		643	664	696	751	652	585	719	745	752	660	690	49	585	756
		692	756	657	702	673									

End of Table 2

(Sheet 2 of 2)

By accepting the data and results presented on this report, the Client agrees to limit the liability of TRI SUZHOU from Client and all other related parties for any claims on issues, due to the use of this data, to the cost respective of the tests presented in this report; and the Client agrees to indemnify and hold harmless TRI SUZHOU from and against all liabilities in excess of the aforementioned limits.



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TABLE 3.

MATERIAL PROPERTIES

CLIENT:

PROJECT: Geotextile Testing

Date Received: 2024.05.24

Date Reported: 2024.05.29

Client Sample ID: GT300P

Material Description: Black Nonwoven Geotextile

QC'd By: Steve/Ann. B.

TRI Job No.: SCH24197

TRI Control No.: 11626

SPECIMENS

	1	2	3	4	5	6	7	8	9	10	Avg.	Std. Dev.	Min	Max	
METHOD	DESCRIPTION														
ASTM D5261	Mass per Unit Area (gm/ m ²)														
	Test Specimen Size : 4" x 8"														
	276.9	281.8	271.1	275.0	285.2						278.0	5.5	271.1	285.2	
ASTM D4632	Grab Tensile														
	Test was performed as directed in D4632, dry condition.CRE Type Tensile Testing Machine (YT010 P) with hydraulic action grips and 1 " x 2 "														
	(25.4mmX 50.8mm) rubber faces was used. set for 12" (300 mm)/min constant rate of extension, with initial gauge length														
	(distance between grips) of 3 "(76mm). Specimen size: 4" X 8 "(100 mmX200mm). Maximum load used for testing: 1000 lbs(5000N)														
	Grab Breaking Load (N)														
	MD	1097	1098	1118	1092	1030	1068	1114	1229	1106	1110	1106	51	1030	1229
	TD	1064	1299	1152	1005	1216	1213	1127	986	1210	1237	1151	104	986	1299
	Apparent Breaking Elongation (percent)														
	MD	51	57	55	54	58	58	53	58	55	54	55	2	51	58
	TD	61	67	63	60	58	67	66	64	64	70	64	4	58	70
ASTM D4595	Wide-Width Strip Tensile														
	Test was performed as directed in ASTM D4595, dry condition. CRE Type Tensile Testing Machine (YT010P) equipped with 2" x 8" (50mmX 200mm) Grips														
	was used. set for 0.4" (10 mm/min) constant rate of extension, with initial gauge length (distance between grips) of 4"(100mm)														
	Specimen Size: 8" X 8" (200mm X200mm). Full scale force range used for testing: 18000lbs (80000N)														
	Tensile Strength (kN/m)														
	MD	17.8	16.4	16.7	19.2	16.7	17.0					17.3	1.1	16.4	19.2
	TD	19.2	35.4	20.5	17.6	19.4	17.2					21.5	6.9	17.2	35.4
	Elongation at Break (percent)														
	MD	40	40	41	42	36	41					40	2	36.4	42.3
	TD	51	50	54	57	54	49					53	3	48.9	57.1

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TABLE 3.

MATERIAL PROPERTIES

CLIENT:

PROJECT: Geotextile Testing

Date Received: 2024.05.24

Date Reported: 2024.05.29

Client Sample ID: GT300P

Material Description: Black Nonwoven Geotextile

QC'd By: *Steve/王. 强.*

TRI Job No.: SCH24197

TRI Control No.: 11626

SPECIMENS														
	1	2	3	4	5	6	7	8	9	10	Avg.	Std. Dev.	Min	Max
METHOD	DESCRIPTION													
ASTM D4833	Puncture Resistance (N)													
	Specimens were tested as directed in Test Method D4833. They were clamped without tension between circular plates of a ring clamp attachment secured in the tensile machine. Test specimens extended to or beyond the outer edges of the clamping plates.													
	687	870	725	689	773	698	677	638	724	860	733	72	638	870
	692	686	757	836	683									

End of Table 3

(Sheet 2 of 2)

By accepting the data and results presented on this report, the Client agrees to limit the liability of TRI SUZHOU from Client and all other related parties for any claims on issues, due to the use of this data, to the cost respective of the tests presented in this report; and the Client agrees to indemnify and hold harmless TRI SUZHOU from and against all liabilities in excess of the aforementioned limits.