

BICS Laboratories Ltd

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REPORT

GEOSYNTHETICS TEST REPORT

REPORT REFERENCE: BS-K956/a

Report Date 09/11/2015
Client Stratus Environmental Ltd, Rossett, Wrexham, LL12 0AY
Contact Richard Clarke
Contract Reference Hafod Landfill Site {Cell 4}
Client PO/Ref No 967/CE1013/RClarke

Material Tested Geotextile
Date Received 27/10/2015
Sample ID GTEX 1

Tests Requested Tensile Properties - BS EN ISO 10319:2008
Puncture Resistance - BS EN ISO 12236:2006
Characteristic Opening Size - BS EN ISO 12956:2010

If you have any questions or require additional information, please do not hesitate to contact us.

Report Authorisation:

Ryan Hackney
Laboratory Manager
09/11/2015



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Tests Marked with an asterisk (*) in this report are not UKAS accredited, and therefore are not included in the UKAS Accreditation Schedule for our laboratory.

Tests marked # have been subcontracted and are UKAS accredited. Tests marked ^F are accredited under the company's UKAS Flexible Scope.

This test report is in a condensed format, complete test details available upon request.

This test report may not be reproduced other than in full, except with prior written approval.



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GEOSYNTHETICS TEST RESULTS STRATUS ENVIRONMENTAL LTD P.O NO: 967/CE1013/RClarke

Contract Ref: Hafod Landfill Site {Cell 4}
Material: Geotextile
Sample ID: GTEX 1

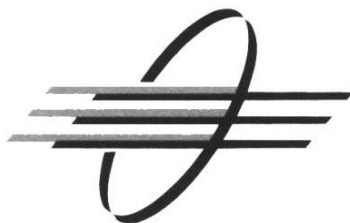
Report Ref No: BS-K956/a
BICS Labs ID: 01
Dates Tested: 02-05/11/2015

PARAMETER	TEST SPECIMEN NUMBER										MEAN	Std Dev
	1	2	3	4	5	6	7	8	9	10		
Tensile Properties (BS EN ISO 10319:2008)												
Tensile Strength kN/m (MD)	8.37	8.84	8.94	8.43	8.72						8.66	0.25
Tensile Strength kN/m (CD)	9.64	8.96	10.06	9.50	8.87						9.40	0.49
Tensile Strain % (MD)	50.4	51.9	51.1	50.3	50.2						50.8	0.7
Tensile Strain % (CD)	59.0	51.0	53.9	60.5	57.1						56.3	3.8
Puncture Resistance (BS EN ISO 12236:2006)												
Puncture Force kN	1.39	1.78	1.53	1.49	1.40						1.52	0.16
Puncture Displacement mm	44.7	49.0	44.2	46.0	43.9						45.6	2.1
Characteristic Opening Size (BSEN ISO 12956:2010)												
O ₉₀ µm	95										95	-

Atmospheric Conditions at Test / Conditioning : 21 ± 2 °C, Relative Humidity : 65 ± 5 % RH

BICS Laboratories Ltd. neither accepts responsibility for nor makes claim as to the final use and purpose of the material.
Unless otherwise detailed sample sizes and related test items comply with the listed test method. Test results relate only to the sample(s) supplied.
The company also observes and maintains client confidentiality.

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REPORT

GEOSYNTHETICS TEST REPORT

REPORT REFERENCE: BS-K957/a

Report Date 06/11/2015
Client Stratus Environmental Ltd, Rossett, Wrexham
Contact Richard Clarke
Contract Reference Hafod Landfill Site {Cell 4}
Client PO/Ref No 967/CE1013/RClarke

Material Tested Geocomposite
Date Received 27/10/2015
Sample ID GCOMP1 & GCOMP 2

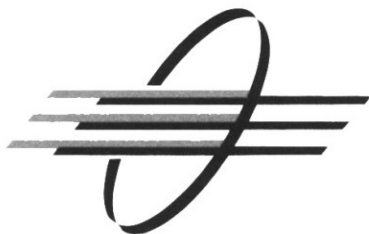
Tests Requested Thickness - BSEN ISO 9863:2005
Tensile Strength - BSEN ISO 10319:2008
Puncture Resistance - BSEN ISO 12236:2006
In Plane Water Flow - BSEN ISO 12958:2010
Water Flow Under Constant Head - BSEN ISO 11058:2010

If you have any questions or require additional information, please do not hesitate to contact us.

Report Authorisation:

Clifford Butt
Managing Director
06/11/2015





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GEOSYNTHETICS TEST RESULTS STRATUS ENVIRONMENTAL LTD P.O NO: 967/CE1013/RClarke

Contract Ref: Hafod Landfill Site {Cell 4}
Material: Geocomposite
Sample ID: GCOMP1, Roll No. 17

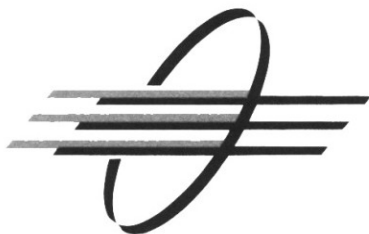
Report Ref No: BS-K957/a
BICS Labs ID: 01
Dates Tested: 05-06/11/2015

PARAMETER	TEST SPECIMEN NUMBER										MEAN	Std Dev
	1	2	3	4	5	6	7	8	9	10		
Thickness 2kPa (BSEN ISO 9863:2005)												
mm	5.26	5.14	5.10	5.05	5.16	5.05	5.24	5.17	5.09	5.03	5.13	0.08
Tensile Properties (BSEN ISO 10319:2008)												
Tensile Strength kN/m (MD)	22.2	24.8	22.6	26.6	23.9						24.0	1.8
Tensile Strength kN/m (CD)	20.2	23.0	22.4	19.2	21.5						21.3	1.6
Tensile Strain % (MD)	29.8	36.0	30.8	40.9	32.0						33.9	4.6
Tensile Strain % (CD)	34.9	36.7	31.2	34.6	31.6						33.8	2.3
Puncture Resistance (BSEN ISO 12236:2006)												
Puncture Force N	3188	3673	3161	3292	3535						3370	225
Puncture Displacement mm	38.5	41.9	39.5	40.2	42.2						40.5	1.6
In Plane Waterflow (BSEN ISO 12958:2010)												
H.G = 1.0, 200kPa, Hard/Hard Platens												
l/s/m	0.57	0.61	0.57								0.58	0.02
Waterflow Constant Head (BSEN ISO 11058:2010)												
l/s/m ²	78	86	77	76	66						77	7

Atmospheric Conditions at Test / Conditioning : 21 ± 2 °C, Relative Humidity : 65 ± 5 % RH

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GEOSYNTHETICS TEST RESULTS

STRATUS ENVIRONMENTAL LTD

P.O NO: 967/CE1013/RClarke

Contract Ref: Hafod Landfill Site {Cell 4}

Material: Geocomposite

Sample ID: GCOMP2, Roll No. 17

Report Ref No: BS-K957/a

BICS Labs ID: 02

Dates Tested: 05-06/11/2015

PARAMETER	TEST SPECIMEN NUMBER										MEAN	Std Dev
	1	2	3	4	5	6	7	8	9	10		
Thickness 2kPa (BSEN ISO 9863:2005)												
mm	5.05	5.02	5.02	5.01	5.02	5.10	5.07	5.02	5.00	5.14	5.04	0.04
Tensile Properties (BSEN ISO 10319:2008)												
Tensile Strength kN/m (MD)	25.8	24.8	20.4	23.8	22.3						23.4	2.1
Tensile Strength kN/m (CD)	23.6	25.1	22.8	22.1	23.1						23.3	1.1
Tensile Strain % (MD)	35.2	34.3	25.1	31.0	27.8						30.7	4.3
Tensile Strain % (CD)	47.4	46.0	42.8	41.3	37.1						42.9	4.1
Puncture Resistance (BSEN ISO 12236:2006)												
Puncture Force N	3484	3261	3574	3461	3141						3384	178
Puncture Displacement mm	42.8	40.7	43.7	42.2	41.7						42.2	1.1
In Plane Waterflow (BSEN ISO 12958:2010)												
H.G = 1.0, 200kPa, Hard/Hard Platens												
l/s/m	0.53	0.56	0.54								0.54	0.02
Waterflow Constant Head (BSEN ISO 11058:2010)												
l/s/m ²	58	71	65	59	65						64	5

Atmospheric Conditions at Test / Conditioning : 21 ± 2 °C, Relative Humidity : 65 ± 5 % RH

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