

BICS Laboratories Ltd

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REPORT

GEOSYNTHETICS TEST REPORT

REPORT REFERENCE: BS-K114/b

Report Date 17/02/2015
Client Stratus Environmental Ltd, Thorpe Park, Leeds, LS15 8GB
Contact Andrew Coxon
Contract Reference Hafod Landfill Site
Client PO/Ref No 669/CE1005/A Everson

Material Tested Geotextile
Date Received 13/02/2015
Sample ID C3 LAB

Tests Requested Tensile Properties - BSEN ISO 10319:2008
Puncture Resistance - BSEN ISO 12236:2006
Characteristic Opening Size - BSEN ISO 12956:2010
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
18/02/2015



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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.

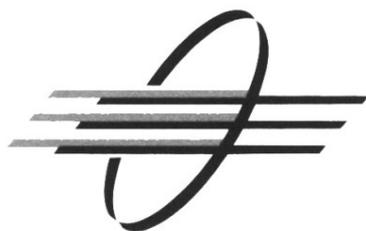
Tests marked # have been subcontracted and are UKAS accredited. Tests marked ^F are accredited under the company's UKAS Flexible Scope.

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.

BICS Laboratories Ltd, Unit 2, Little John Mill, Oak Hill Road, Brighouse, West Yorkshire, HD6 1SN

Directors: Clifford Butt, Shazeena N. Iqbal Company Registration Number: 4213030



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GEOSYNTHETICS TEST RESULTS STRATUS ENVIRONEMNTAL LTD P.O NO: 669/CE1005/A Everson

Contract Ref: Hafod Landfill Site
Material: Geotextile
Sample ID: C3 LAB

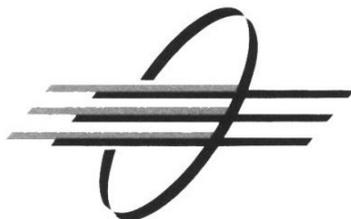
Report Ref No: BS-K114/b
BICS Labs ID: 03
Dates Tested:16-17/02/2015

PARAMETER	TEST SPECIMEN NUMBER										MEAN	Std Dev	
	1	2	3	4	5	6	7	8	9	10			
Tensile Properties (BSEN ISO 10319:2008)													
Tensile Strength kN/m (MD)	9.23	9.49	9.97	10.31	10.28							9.85	0.48
Tensile Strength kN/m (CD)	10.16	11.08	10.14	8.46	9.16							9.80	1.01
Tensile Strain % (MD)	44.7	45.8	45.1	52.9	48.6							47.4	3.4
Tensile Strain % (CD)	59.8	63.8	54.2	54.0	56.6							57.7	4.1
Puncture Resistance (BSEN ISO 12236:2006)													
Puncture Force kN	1.34	1.56	1.53	1.40	1.37							1.44	0.10
Puncture Displacement mm	39.9	43.5	42.4	42.0	41.4							41.8	1.3
Characteristic Opening Size (BSEN ISO 12956:2010)													
O ₉₀ µm	145										145	-	
Waterflow 50mm Constant Head (BSEN ISO 11058:2010)													
l/s/m ²	50	53	52	52	51							52	1

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.
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REPORT

GEOSYNTHETICS TEST REPORT

REPORT REFERENCE: BS-K115/c

Report Date 18/02/2015
Client Stratus Environmental Ltd, Thorpe Park, Leeds, LS15 8GB
Contact Adam Everson
Contract Reference Hafod Landfill Site {Cell 3 Sidewall}
Client PO/Ref No 669/CE1005/A Everson

Material Tested Geocomposite
Date Received 13/02/2015
Sample ID C1 LAB & C2 LAB {Cell 3 Sidewall}

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
Charateristic Opening Size - 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
18/02/2015



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GEOSYNTHETICS TEST RESULTS STRATUS ENVIRONMENTAL LTD P.O NO: 669/CE1005/A Everson

Contract Ref: Hafod Landfill Site {Cell 3 Sidewall}
Material: Geocomposite
Sample ID: C1 LAB

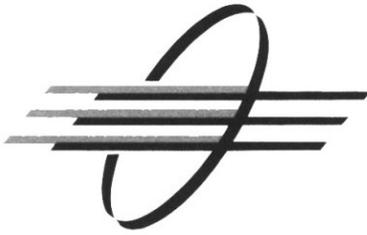
Report Ref No: BS-K115/c
BICS Labs ID: 05
Dates Tested: 16-18/02/2015

PARAMETER	TEST SPECIMEN NUMBER										MEAN	Std Dev
	1	2	3	4	5	6	7	8	9	10		
Thickness (BSEN ISO 9863:2005)												
mm	7.98	6.99	7.51	7.55	6.90	6.86	7.06	6.71	6.40	7.70	7.16	0.49
Tensile Properties (BSEN ISO 10319:2008)												
Tensile Strength kN/m (MD)	15.8	15.3	14.3	16.3	17.0						15.7	1.0
Tensile Strength kN/m (CD)	13.2	15.0	14.4	14.8	14.3						14.3	0.7
Tensile Strain % (MD)	41.9	33.7	36.1	36.6	35.7						36.8	3.0
Tensile Strain % (CD)	52.3	51.5	44.2	43.4	40.3						46.4	5.3
Puncture Resistance (BSEN ISO 12236:2006)												
Puncture Force kN	2.29	2.78	2.59	2.30	2.30						2.45	0.2
Puncture Displacement mm	45.5	46.5	46.4	46.5	45.0						46.0	0.7
In Plane Waterflow (BSEN ISO 12958:2010)												
<i>H.G = 0.5, 20kPa, Hard/Soft Platens</i>												
l/s/m		1.40	1.32	1.32							1.35	0.05
Characteristic Opening Size (BSEN ISO 12956:2010)												
O ₉₀ μm	97										97	
Waterflow Constant Head (BSEN ISO 11058:2010)												
l/s/m ²	90	82	91	90	86						88	4

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: 669/CE1005/A Everson

Contract Ref: Hafod Landfill Site {Cell 3 Sidewall}
Material: Geocomposite
Sample ID: C2 LAB

Report Ref No: BS-K115/c
BICS Labs ID: 06
Dates Tested:

PARAMETER	TEST SPECIMEN NUMBER										MEAN	Std Dev	
	1	2	3	4	5	6	7	8	9	10			
Thickness (BSEN ISO 9863:2005)													
mm	6.54	6.65	6.91	6.62	6.78	7.04	6.79	6.56	6.63	6.46	6.70	0.18	
Tensile Properties (BSEN ISO 10319:2008)													
Tensile Strength kN/m (MD)	13.8	11.7	14.9	13.1	14.6							13.6	1.3
Tensile Strength kN/m (CD)	12.8	12.5	14.4	13.6	16.9							14.1	1.8
Tensile Strain % (MD)	37.8	28.7	37.3	28.4	40.6							34.6	5.6
Tensile Strain % (CD)	40.3	33.3	33.4	26.0	32.2							33.0	5.1
Puncture Resistance (BSEN ISO 12236:2006)													
Puncture Force kN	2.12	2.24	2.35	2.73	2.51							2.39	0.2
Puncture Displacement mm	45.7	45.6	45.7	48.1	29.4							42.9	7.6
In Plane Waterflow (BSEN ISO 12958:2010)													
<i>H.G = 0.5, 20kPa, Hard/Soft Platens</i>													
l/s/m		1.25	1.30	1.30								1.28	0.03
Characteristic Opening Size (BSEN ISO 12956:2010)													
O ₉₀ μm	88											88	
Waterflow Constant Head (BSEN ISO 11058:2010)													
l/s/m ²	96	90	95	97	93							94	3

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

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