TRI:n 1.11.2016 koetulosten vertailu Kaitoksen omiin tuloksiin.

	Kuorintakoe [A / B -puoli] 1,5 mm: >318 N, 2,0 mm: >424 N				**Vetokoe** 1,5 mm: >420 N, 2,0 mm: >561 N			
Näytteen tunniste	**TRI**		**Kaitos**		**TRI**		**Kaitos**	
2 mm GEOTUBE 5 / S27	640 N / 524 N	SE/SE	560 N / 599 N	SE/SE	660 N		675 N	SE
1,5 mm KIPSIS. 1-2 VP / S7	438 N / 446 N	SE/SE	423 N / 411 N	SE/SE	480 N		446 N	SE
1,5 mm GEOTUBE 6 / S27	426 N / 430 N	SE/SE	396 N / 391 N	SE/SE	460 N		457 N	venyy
1,5 mm SH1 LOHKO3 / S77	418 N / 424 N	SE/SE	412 N / 377 N	SE/SE	460 N		429 N	SE
1,5 mm GEOTUBE 4 / S20	430 N / 382 N	SE/SE	487 N / 377 N	SE/SE	480 N		498 N	SE

Codes

AD	Sauma kuoriutuu täysin auki, HYLKÄYS	Adhesion failure (100% Peel)
BRK	Kalvon murtuma	Break in sheeting (top or bottom sheet)
SE1	Sauman ulkoreunan viereinen kalvon murtuma	Break in outer edge of the seam (top or bottom sheet)
SE2	Sauman sisäreunan viereinen molempien kalvojen murtuma	Break at inner edge of the seam (through both sheets)
AD-BRK	Osa kuoriutuma, murtuma kalvossa. HYLKÄYS >25%	Break infirst seam after some adhesion faillure (top or bottom)
SIP	Murtuma kalvon sisällä	Separation in the plane of the sheet (top or bottom sheet)

Hyväksytyt murtotavat: BRK, SE1, SE2, AD-BRK (<25%), SIP (jos lujuusvaatimukset toteutuvat)
Hylkäävät murtotavat: AD, AD-BRK (>25%)

***TRI:n koetulokset on ilmoitettu heidän omassa taulukossaan yksikössä N /mm. Tähän taulukkoon nuo arvot on muutettu vastaamaan Kaitos Oy:n käyttämää koekappaleleveyttä 20 mm. Tämä on tehty kertomalla TRI:n taulukossa ilmoittamat arvot 20 mm:llä.**

TRI/Environmental, Inc.
A Texas Research International Company

Date: 2016-01-11

Mail To:
Taneli Kaarela
Kaitos Oy
Karapellontie 8
02610 Espoo, Finland , ,

Bill To:

Kaitos Oy

e-mail:
taneli.kaarela@kaitos.fi olli.book@kaitos.fi perttu.juntunen@kaitos.fi marja-liisa.leskinen@kaitos.fi

Dear Mr. Kaarela,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**1-11-2016**
TRI Job Reference Number:	**19267**
Material(s) Tested:	(4) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Jennifer Tenney
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

http://www.geosyntheticstesting.com
9063 Bee Caves Road / Austin, Tx. 78733 / 512.263.2101 / fax: 512.263.2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: Kaitos Oy
Project: 1-11-2016

Material: 1.5 mm HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 19267

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: S-7 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (N/mm)	21.7	21.7	21.7	22.3	22.3	**21.9**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (N/mm)	22.1	22.1	22.1	22.4	22.6	**22.3**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (N/mm)	23.8	23.8	24.5	24.7	23.7	**24.0**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: S-20 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (N/mm)	22.1	20.8	22.6	21.5	20.7	**21.5**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (N/mm)	18.2	19.1	19.4	19.3	19.4	**19.1**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (N/mm)	23.8	24.7	24.4	24.7	23.5	**24.0**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

http://www.geosyntheticstesting.com
9063 Bee Caves Road / Austin, Tx. 78733 / 512.263.2101 / fax: 512.263.2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Kaitos Oy

Project: 1-11-2016

Material: 1.5 mm HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

TRI Log#: 19267

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: S-27 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (N/mm)	21.9	21.5	20.8	21.0	21.4	**21.3**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (N/mm)	22.3	21.2	21.7	21.4	21.2	**21.5**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (N/mm)	22.4	22.8	22.6	23.1	23.1	**23.0**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: S-77 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (N/mm)	21.0	20.8	20.8	20.8	20.8	**20.9**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (N/mm)	21.4	19.3	21.9	22.4	21.0	**21.2**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (N/mm)	23.1	23.3	22.8	23.1	22.8	**23.0**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

http://www.geosyntheticstesting.com
9063 Bee Caves Road / Austin, Tx. 78733 / 512.263.2101 / fax: 512.263.2558

TRI/Environmental, Inc.
A Texas Research International Company

Date: 2016-01-11

Mail To:
Taneli Kaarela
Kaitos Oy
Karapellontie 8
02610 Espoo, Finland , ,

Bill To:

Kaitos Oy

e-mail:
taneli.kaarela@kaitos.fi olli.book@kaitos.fi perttu.juntunen@kaitos.fi marja-liisa.leskinen@kaitos.fi

Dear Mr. Kaarela,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**1-11-2016**
TRI Job Reference Number:	**19266**
Material(s) Tested:	(1) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Jennifer Tenney
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

http://www.geosyntheticstesting.com
9063 Bee Caves Road / Austin, Tx. 78733 / 512.263.2101 / fax: 512.263.2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Kaitos Oy

Project: 1-11-2016

Material: 2 mm HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

TRI Log#: 19266

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: S-27 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (N/mm)	30.8	33.5	31.7	32.1	31.9	**32.0**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (N/mm)	29.1	22.8	20.7	30.7	28.0	**26.2**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (N/mm)	33.3	32.6	33.8	33.5	32.9	**33.0**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

http://www.geosyntheticstesting.com
9063 Bee Caves Road / Austin, Tx. 78733 / 512.263.2101 / fax: 512.263.2558