Summary of Test Results
EPDM - 50° Celcius

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	05/15/2009
Material:	EPDM	Tested By:	RL/AM/MLB
Sample ID:	AZ12347 - EPDM	Checked By:	JB

TEST	Baseline	30-Day Immersion		60-Day Immersion		90-Day Immersion		120-Day Immersion	
READING	Average	Average	% Change	Average	% Change	Average	% Change	Average	% Change
Puncture	39.6	31.9	-19.31	36.2	-8.49	33.1	-16.23	33.7	-14.71
Density	1.112	1.110	-0.15	1.110	-0.12	1.107	-0.39	1.104	-0.72
Hardness	2	1	-50.00	1	-33.33	1	-33.33	2	-16.67
2% Modulus	1600	950	-40.63	860	-46.25	898	-43.88	898	-43.88
Tear	9.6	9.8	2.08	10.4	8.33	10.4	8.33	10.0	4.17
Volatiles	0.6279	2.1780	246.85	2.4	282.57	1.8011	186.82	1.9855	216.19
Extractables	1.5058	1.4933	-0.83	2.2334	48.31	2.3321	54.87	2.3891	58.66

JLT Laboratories, Inc.

Geomembrane Conformance Test Results

EPDM - 50° Celcius

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	05/15/2009
Material:	EPDM	Tested By:	RL/AM/MLB
Sample ID:	AZ12347 - EPDM 120 Day Testing	Checked By:	JB

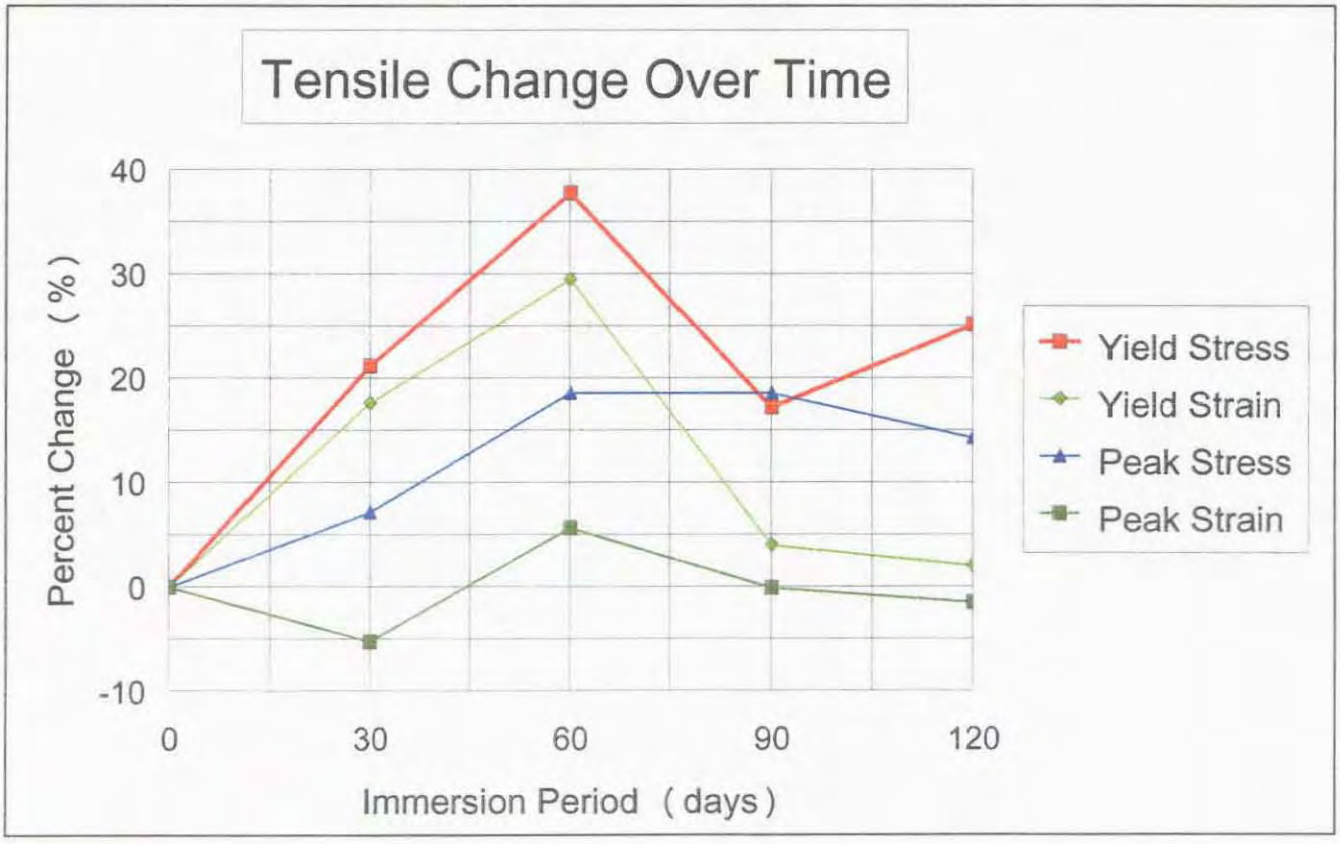
PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Puncture Resistance	lbs	33.2	32.5	32.7	34.3	36.0	33.7	1.2909
Density	gr/cucm	1.10	1.10	1.10			1.10	0.0005
Hardness		2	1	2			2	0.4714
2% Secant Modulus	psi	910	880	910	920	870	898	19.4
Tear (MD Only)	lbs	10	10	10	10	10	10.0	0.0000
Volatiles	%	1.9570	2.0140				1.9855	0.0285
Extractables	%	2.3807	2.3975				2.3891	0.0084

JLT Laboratories, Inc.

Summary of Test Results
EPDM - 23° Celcius

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	05/15/2009
Material:	EPDM	Tested By:	RL/AM/MLB
Sample ID:	AZ12347 - EPDM	Checked By:	JB

TEST	Baseline	30-Day Immersion		60-Day Immersion		90-Day Immersion		120-Day Immersion	
READING	Average	Average	% Change	Average	% Change	Average	% Change	Average	% Change
Yield Stress	30.2	36.6	21.19	41.6	37.75	35.4	17.22	37.8	25.17
Yield Strain	348.8	410.2	17.60	451.6	29.47	362.8	4.01	356.0	2.06
Peak Stress	56.0	60.0	7.14	66.4	18.57	66.4	18.57	64.0	14.29
Peak Strain	433.2	410.4	-5.26	457.6	5.63	432.8	-0.09	426.8	-1.48



JLT Laboratories, Inc.

Tensile Test Results

EPDM - 23° Celcius

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell	**Date:**	02/15/2009
Material:	EPDM	**Tested By:**	RL/AM/MLB
Sample ID:	AZ12347 - EPDM **Baseline Testing**	**Checked By:**	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Yield Stress	lb/in	30	30	27	29	35	30.2	2.64
Yield Strain	%	328	327	330	351	408	348.8	30.89
Peak Stress	lb/in	56	56	56	56	56	56.0	0.00
Peak Strain	%	427	434	447	456	402	433.2	18.56

JLT *Laboratories, Inc.*

Tensile Test Results

EPDM - 23° Celcius

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell	**Date:**	02/15/2009
Material:	EPDM	**Tested By:**	RL/AM/MLB
Sample ID:	AZ12347 - EPDM 30 Day Testing	**Checked By:**	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Yield Stress	lb/in	38	37	38	35	35	36.6	1.36
Yield Strain	%	418	413	413	392	415	410.2	9.28
Peak Stress	lb/in	60	64	60	60	56	60.0	1.89
Peak Strain	%	441	391	316	465	439	410.4	52.96

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Tensile Test Results

EPDM - 23° Celcius

JLT

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	03/15/2009
Material:	EPDM	Tested By:	RL/AM/MLB
Sample ID:	AZ12347 - EPDM 60 Day Testing	Checked By:	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Yield Stress	lb/in	41	44	46	39	38	41.6	3.01
Yield Strain	%	440	446	420	475	477	451.6	21.71
Peak Stress	lb/in	68	64	68	64	68	66.4	1.89
Peak Strain	%	471	455	444	427	491	457.6	22.01

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Tensile Test Results

EPDM - 23° Celcius

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell	**Date:**	04/15/2009
Material:	EPDM	**Tested By:**	RL/AM/MLB
Sample ID:	AZ12347 - EPDM **90 Day Testing**	**Checked By:**	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Yield Stress	lb/in	33	38	36	37	33	35.4	2.06
Yield Strain	%	333	387	377	355	362	362.8	18.64
Peak Stress	lb/in	64	64	68	68	68	66.4	1.96
Peak Strain	%	467	341	460	455	441	432.8	46.68

JLT *Laboratories, Inc.*

Tensile Test Results

EPDM - 23° Celcius

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell	**Date:**	05/15/2009
Material:	EPDM	**Tested By:**	RL/AM/MLB
Sample ID:	AZ12347 - EPDM **120 Day Testing**	**Checked By:**	JB

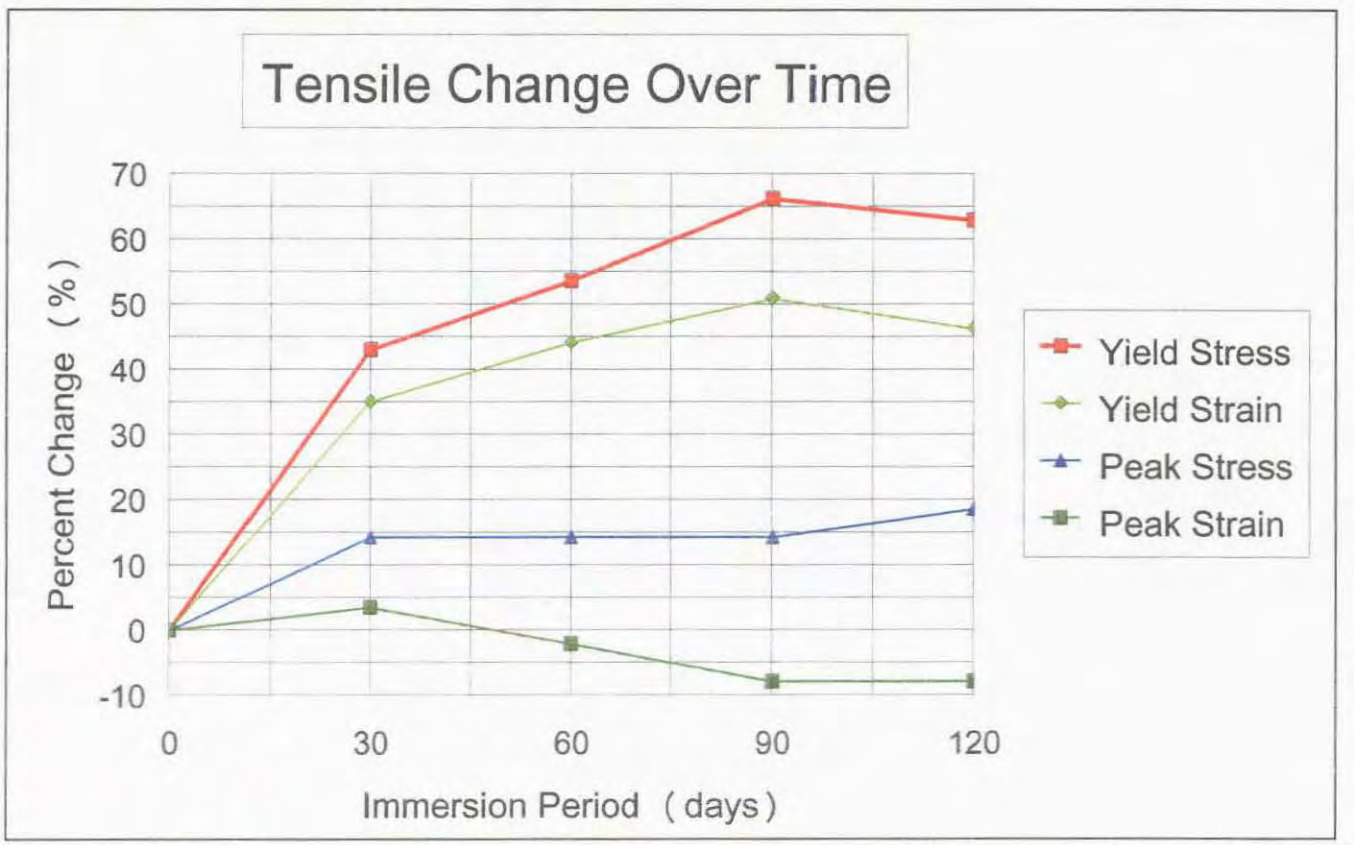
PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Yield Stress	lb/in	48	49	30	30	32	37.8	8.77
Yield Strain	%	492	315	290	308	375	356.0	73.75
Peak Stress	lb/in	68	64	64	60	64	64.0	2.53
Peak Strain	%	433	399	469	428	405	426.8	24.77

JLT *Laboratories, Inc.*

Summary of Test Results
EPDM - 50° Celcius

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	05/15/2009
Material:	EPDM	Tested By:	RL/AM/MLB
Sample ID:	AZ12347 - EPDM	Checked By:	JB

TEST READING	Baseline	30-Day Immersion		60-Day Immersion		90-Day Immersion		120-Day Immersion	
	Average	Average	% Change	Average	% Change	Average	% Change	Average	% Change
Yield Stress	30.2	43.2	43.05	46.4	53.64	50.2	66.23	49.2	62.91
Yield Strain	348.8	471.0	35.03	502.8	44.15	526.4	50.92	510.4	46.33
Peak Stress	56.0	64.0	14.29	64.0	14.29	64.0	14.29	66.4	18.57
Peak Strain	433.2	448.4	3.51	424.0	-2.12	399.0	-7.89	399.0	-7.89



JLT Laboratories, Inc.

Tensile Test Results

EPDM - 50° Celcius

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell	**Date:**	02/15/2009
Material:	EPDM	**Tested By:**	RL/AM/MLB
Sample ID:	AZ12347 - EPDM **Baseline Testing**	**Checked By:**	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Yield Stress	lb/in	30	30	27	29	35	30.2	2.64
Yield Strain	%	328	327	330	351	408	348.8	30.89
Peak Stress	lb/in	56	56	56	56	56	56.0	0.00
Peak Strain	%	427	434	447	456	402	433.2	18.56

JLT *Laboratories, Inc.*

Tensile Test Results
EPDM - 50° Celcius

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	02/15/2009
Material:	EPDM	Tested By:	RL/AM/MLB
Sample ID:	AZ12347 - EPDM 30 Day Testing	Checked By:	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Yield Stress	lb/in	42	44	45	45	40	43.2	1.94
Yield Strain	%	477	462	481	480	455	471.0	10.53
Peak Stress	lb/in	64	64	64	64	64	64.0	0.00
Peak Strain	%	441	411	467	463	460	448.4	20.72

JLT Laboratories, Inc.

Tensile Test Results

EPDM - 50° Celcius

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell	**Date:**	03/15/2009
Material:	EPDM	**Tested By:**	RL/AM/MLB
Sample ID:	AZ12347 - EPDM **60 Day Testing**	**Checked By:**	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Yield Stress	lb/in	45	51	44	47	45	46.4	2.50
Yield Strain	%	469	564	477	489	515	502.8	34.33
Peak Stress	lb/in	64	64	68	64	60	64.0	1.89
Peak Strain	%	435	433	444	408	400	424.0	16.94

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Tensile Test Results

EPDM - 50° Celcius

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell	**Date:**	04/15/2009
Material:	EPDM	**Tested By:**	RL/AM/MLB
Sample ID:	AZ12347 - EPDM **90 Day Testing**	**Checked By:**	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Yield Stress	lb/in	47	52	50	53	49	50.2	2.14
Yield Strain	%	498	554	515	577	488	526.4	33.86
Peak Stress	lb/in	68	60	64	60	68	64.0	3.58
Peak Strain	%	448	369	387	376	415	399.0	29.09

JLT *Laboratories, Inc.*

Tensile Test Results

EPDM - 50° Celcius

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell	**Date:**	05/15/2009
Material:	EPDM	**Tested By:**	RL/AM/MLB
Sample ID:	AZ12347 - EPDM **120 Day Testing**	**Checked By:**	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Yield Stress	lb/in	44	55	47	46	54	49.2	4.45
Yield Strain	%	431	579	482	522	538	510.4	50.42
Peak Stress	lb/in	72	68	64	68	60	66.4	4.08
Peak Strain	%	420	389	403	415	368	399.0	18.84

JLT *Laboratories, Inc.*

JLT LABORATORIES, INC.
GEOTECHNICAL, GEOSYNTHETIC AND MATERIALS TESTING AND RESEARCH

June 29, 2009
09LR1826.01

RECEIVED
JUL 06 2009
SYRACUSE

Parsons
290 Elwood Davis Road
Suite 312
Liverpool, NY 13088

Attn: David Steele

RE: COMPATIBILITY TEST RESULTS
GEOTUBE FABRIC & SEWING THREAD WITH SOLVAY WASTE
HONEYWELL PROJECT
PO NO. 444853.00001.00

Dear Mr. Steele:

Similar to the geomembrane samples, the TenCate Geotube fabric and the sewing thread used to sew the fabric were also subject to immersion testing in the Solvay waste. A virgin sample of each material was taken from the samples and subject to the following baseline tests:

Fabric -	Puncture	ASTM D-4833
	Trap Tear	ASTM D-4533
	Grab Strength	ASTM D-4632
	AOS	ASTM D-4751
	Permittivity	ASTM D-4491
Thread -	Tensile Strength	ASTM D-5446

Samples of the material were then placed in two tanks of Solvay waste at 23°C and 50°C, respectively. At 30, 60, 90 and 120 days, coupons were removed, cleaned and tested for the same properties as the baseline tests. The average results were compared to the average baseline test results and the percent change computed. The percent change vs immersion time was plotted as shown on the attached data sheets. An evaluation of the results are described herein.

TenCate Geotube

Prior to testing, the immersed coupons were washed to remove the excess Solvay waste and rinsed to clean the holes in the fabric. If there holes were not cleaned, AOS and Permittivity testing would not yield any meaningful results since the holes would be completely blocked. The ends of the thread were simply wiped with a moist towel to fit in the clamps.

Puncture
Puncture results varied from +34% to -26%. This is typical with a coarse woven fabric because it depends on where the puncture needle is seated on the fabric. If the needle aligns with a strand, the results are higher. If the needle aligns at a woven junction, the results are lower. Per the test procedure, the alignment is random in the test unit.

Trap Tear
Trap Tear values generally decreased by about 25% and remained relatively consistent after 30 days.

Grab Strength
Grab Strength decreased by about 10+% and remained essentially consistent after 30 days.

AOS
This value ranged from an AOS of 40 to an AOS of 50. Essentially, there was no significant change in AOS over the 120 day period. Prior to testing, the fabric was washed to remove the encrusted Solvay waste that blocked the holes.

Permittivity
The baseline values average was 0.4 sec^{-1}. Over the 120 day test period, the value varied for 0.4 sec^{-1} to 0.3 sec^{-1} terminating at about 0.35 sec^{-1}. Essentially, there was no meaningful change in Permittivity.

TenCate Fabric Summary

The results indicate no significant deterioration of the fabric. In fact, AOS and Permittivity values were essentially the same throughout the test period.

TenCate Sewing Thread

Since the most important property is the Tensile Strength of the thread used to sew the geotubes, we only performed Tensile Strength per ASTM D-5446. This test was designed to determine the Tensile Strength of thread used for inflatable materials. Since the Geotubes will be filled or inflated with waste, we deemed this an appropriate test.

Again, a sample of the virgin thread was tested for Strength and the average computed as the baseline value. Samples of the thread were immersed in the Solvay waste in 23°C and 50°C tanks. At 30, 60, 60 and 120 days, samples were removed and tested. The average value was computed and the percent difference plotted vs exposure time.

The data plot shows a general increase in Strength vs Time. This is mostly likely attributed to the fact that the thread was encased in Solvay waste when it was tested.

TenCate Sewing Thread Summary

Both the TenCate fabric and sewing thread performed well when exposed to the Solvay waste for 120 days. There is no evidence in these tests to suggest the waste adversely effected the fabric or the thread.

We appreciate the opportunity to provide our services and look forward to working with you again. Should you have any questions, comments or require additional information, please do not hesitate to call. Thank you.

Sincerely,

JLT LABORATORIES, INC.

John Boschuk, Jr., P.E.
President

cc: Martin A. Switzer

Enclosures
JB/mlb
\wp10\letter\09122
Inv# 3828

Summary of Test Results
TenCate GeoTube

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell	**Date:**	05/15/2009
Material:	GT 500 Woven Geotextile	**Tested By:**	RL/AM/MLB
Sample ID:	Geotextile - GeoTube	**Checked By:**	JB

TEST READING	Baseline	30-Day Immersion		60-Day Immersion		90-Day Immersion		120-Day Immersion	
	Average	Average	% Change	Average	% Change	Average	% Change	Average	% Change
Puncture 23°C	159.8	204.9	28.23	136.6	-14.55	120.4	-24.70	189.0	18.26
Puncture 50°C	159.8	138.4	-13.40	118.2	-26.02	186.1	16.44	214.8	34.40
Trap Tear 23°C	312.1	247.2	-20.79	247.4	-20.73	211.0	-32.38	235.1	-24.66
Trap Tear 50°C	312.1	237.2	-23.99	232.8	-25.40	263.7	-15.51	232.8	-25.40
Grab 23°C	307	292	-4.63	317	3.39	222	-27.70	276	-9.98
Grab 50°C	307	280	-8.55	283	-7.70	267	-13.02	286	-6.88
AOS 23°C	40	40	0.00	43	8.33	47	16.67	43	8.33
AOS 50°C	40	43	8.33	43	8.33	47	16.67	47	16.67

JLT Laboratories, Inc.

GeoTube Conformance Test Results

TenCate GeoTube

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	03/31/2009
Material:	GT 500 Woven Geotextile	Tested By:	RL/AM/MLB
Sample ID:	Geotextile - GeoTube **Baseline Testing**	Checked By:	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Puncture 23°C	lbs	158.2	157.8	151.7	167.2	164.2	159.8	5.4090
Puncture 50°C	lbs	158.2	157.8	151.7	167.2	164.2	159.8	5.4090
Trap Tear 23°C	lbs	308.1	297.5	286.2	347.5	321.2	312.1	21.1468
Trap Tear 50°C	lbs	308.1	297.5	286.2	347.5	321.2	312.1	21.1468
Grab 23°C	lbs	332	321	299	287	294	307	17.0482
Grab 50°C	lbs	332	321	299	287	294	307	17.0482
AOS 23°C		40	40	40			40	0.0000
AOS 50°C		40	40	40			40	0.0000

JLT Laboratories, Inc.

GeoTube Conformance Test Results

TenCate GeoTube

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	03/31/2009
Material:	GT 500 Woven Geotextile	Tested By:	RL/AM/MLB
Sample ID:	Geotextile - GeoTube 30 Day Testing	Checked By:	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Puncture 23°C	lbs	146.2	458.5	128.7	154.3	137.0	204.9	127.0715
Puncture 50°C	lbs	127.0	132.0	155.0	142.7	135.3	138.4	9.7425
Trap Tear 23°C	lbs	296.8	295.0	213.1	230.6	200.6	247.2	40.8777
Trap Tear 50°C	lbs	203.1	222.5	294.3	230.6	235.6	237.2	30.6119
Grab 23°C	lbs	322	300	272	288	280	292	17.4539
Grab 50°C	lbs	278	231	295	304	294	280	26.0814
AOS 23°C		40	40	40			40	0.0000
AOS 50°C		40	50	40			43	4.7140

JLT Laboratories, Inc.

GeoTube Conformance Test Results

TenCate GeoTube

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	03/31/2009
Material:	GT 500 Woven Geotextile	Tested By:	RL/AM/MLB
Sample ID:	Geotextile - GeoTube 60 Day Testing	Checked By:	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Puncture 23°C	lbs	126.5	149.3	133.9			136.6	9.4971
Puncture 50°C	lbs	112.6	110.5	131.6			118.2	9.4905
Trap Tear 23°C	lbs	240.6	250.4	251.2			247.4	4.8194
Trap Tear 50°C	lbs	225.6	233.1	239.8			232.8	5.8002
Grab 23°C	lbs	332	329	290			317	19.1311
Grab 50°C	lbs	268	294	287			283	10.9848
AOS 23°C		40	40	50			43	4.7140
AOS 50°C		40	50	40			43	4.7140

JLT Laboratories, Inc.

GeoTube Conformance Test Results

TenCate GeoTube

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	04/28/2009
Material:	GT 500 Woven Geotextile	Tested By:	RL/AM/MLB
Sample ID:	Geotextile - GeoTube 90 Day Testing	Checked By:	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Puncture 23°C	lbs	122.1	118.6				120.4	1.7500
Puncture 50°C	lbs	146.1	226.1				186.1	40.0000
Trap Tear 23°C	lbs	177.5	238.1	217.5			211.0	25.1589
Trap Tear 50°C	lbs	224.3	215.0	351.8			263.7	62.4117
Grab 23°C	lbs	264	192	209			222	30.7282
Grab 50°C	lbs	337	229	234			267	49.7750
AOS 23°C		40	50	50			47	4.7140
AOS 50°C		40	50	50			47	4.7140

JLT Laboratories, Inc.

GeoTube Conformance Test Results

TenCate GeoTube

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	05/15/2009
Material:	GT 500 Woven Geotextile	Tested By:	RL/AM/MLB
Sample ID:	Geotextile - GeoTube 120 Day Testing	Checked By:	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Puncture 23°C	lbs	160.5	175.8	231.7	188.0		189.0	30.6020
Puncture 50°C	229.8	240.1	149.1	255.2			214.8	46.8641
Trap Tear 23°C	lbs	244.3	256.8	204.3			235.1	22.3917
Trap Tear 50°C	lbs	256.7	213.7	228.1			232.8	17.8709
Grab 23°C	lbs	272	280				276	4.0000
Grab 50°C	lbs	241	330				286	44.5000
AOS 23°C		40	50	40			43	4.7140
AOS 50°C		40	50	50			47	4.7140

JLT Laboratories, Inc.

Summary Permittivity of Test Results

TenCate GeoTube

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell	**Date:**	05/15/2009
Material:	GT 500 Woven Geotextile	**Tested By:**	RL/AM/MLB
Sample ID:	Geotextile - GeoTube	**Checked By:**	JB

TEST	Baseline	30-Day Immersion		60-Day Immersion		90-Day Immersion		120-Day Immersion	
READING	Average	Average	% Change	Average	% Change	Average	% Change	Average	% Change
Baseline & 23°C	28.5	25.7	-9.82	21.6	-24.21	28.6	0.35	28.3	-0.70
Baseline & 50°C	28.5	26.8	-5.96	21.8	-23.51	24.6	-13.68	24.4	-14.39

Note: At 60 days, the coupons were only soaked and rinsed but not cleaned with a soft brush, like the other samples.

JLT Laboratories, Inc.

PERMITTIVITY OF GEOTEXTILES

CONSTANT HEAD METHOD

ASTM D-4491 (Also meets D2434 Criteria for permeability)

Client:	Parsons		**Job No.:**	09LR1826.01
Project:	Honeywell Site		**Report Date :**	03/30/09
Material:	Geotextile - GT500		**Technician:**	RL
Sample ID:	Supplied Sample		**Machine:**	JLT-CHPTV-1
Manufacturer:	TenCate	BASLEINE	**Chk'd By :**	JB
Spec Value:	20 gpm/sq ft			

HEAD ACROSS SPECIMEN:	**5.08 cm**		**SAMP. AREA:**	**44.096 cm^2**
WATER TEMPERATURE:	**18.0**	**Degrees C**	**TEMP CORR.**	**1.0510**

COUPON	REPLICATE	FLOW cm^3	TIME sec	FLOW gal/min/ft^2	PERMITTIVITY sec-1
Baseline	1	1305.6	15.31	28.5	0.400
	2	1324.6	15.50	28.6	0.401
	3	1311.6	15.32	28.6	0.402
	4	1320.6	15.50	28.5	0.400
	5	1313.7	15.41	28.5	0.400
			Average :	28.5	0.400

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PERMITTIVITY OF GEOTEXTILES

CONSTANT HEAD METHOD

ASTM D-4491 (Also meets D2434 Criteria for permeability)

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell Site	**Report Date :**	03/30/09
Material:	Geotextile - GT500	**Technician:**	RL
Sample ID:	Supplied Sample	**Machine:**	JLT-CHPTV-1
Manufacturer:	TenCate 30 DAYS	**Chk'd By :**	JB
Spec Value:	20 gpm/sq ft MARV		

HEAD ACROSS SPECIMEN:	**5.08 cm**		**SAMP. AREA:**	**44.096 cm^2**
WATER TEMPERATURE:	**18.0**	**Degrees C**	**TEMP CORR.**	**1.0510**

COUPON	REPLICATE	FLOW cm^3	TIME sec	FLOW gal/min/ft^2	PERMITTIVITY sec-1
23 Degrees C Replicate 1	1	1124.2	15.40	24.4	0.343
	2	1127.9	15.47	24.4	0.342
	3	1130.7	15.44	24.5	0.344
	4	1132.1	15.59	24.3	0.341
	5	1125.0	15.46	24.3	0.341
23 Degrees C Replicate 2	1	1256.6	15.47	27.1	0.381
	2	1272.8	15.72	27.1	0.380
	3	1244.2	15.37	27.0	0.380
	4	1250.2	15.43	27.1	0.380
	4	1252.3	15.50	27.0	0.379
			Average :	25.7	0.361

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PERMITTIVITY OF GEOTEXTILES

CONSTANT HEAD METHOD

ASTM D-4491 (Also meets D2434 Criteria for permeability)

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell Site	**Report Date :**	03/30/09
Material:	Geotextile - GT500	**Technician:**	RL
Sample ID:	Supplied Sample	**Machine:**	JLT-CHPTV-1
Manufacturer:	TenCate 30 DAYS	**Chk'd By :**	JB
Spec Value:	20 gpm/sq ft MARV		

HEAD ACROSS SPECIMEN:	**5.08 cm**	**SAMP. AREA:**	**44.096 cm^2**
WATER TEMPERATURE:	**18.0 Degrees C**	**TEMP CORR.**	**1.0510**

COUPON	REPLICATE	FLOW cm^3	TIME sec	FLOW gal/min/ft^2	PERMITTIVITY sec-1
50 Degrees C Replicate 1	1	1141.5	15.25	25.0	0.351
	2	1150.1	15.35	25.0	0.352
	3	1159.0	15.32	25.3	0.355
	4	1157.8	15.34	25.2	0.354
	5	1162.0	15.47	25.1	0.352
50 Degrees C Replicate 2	1	1305.6	15.31	28.5	0.400
	2	1324.6	15.50	28.6	0.401
	3	1311.6	15.32	28.6	0.402
	4	1312.2	15.50	28.3	0.397
	4	1313.4	15.41	28.5	0.400
			Average :	26.8	0.376

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PERMITTIVITY OF GEOTEXTILES

CONSTANT HEAD METHOD

ASTM D-4491 (Also meets D2434 Criteria for permeability)

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell Site	**Report Date :**	03/30/09
Material:	Geotextile - GT500	**Technician:**	RL
Sample ID:	Supplied Sample	**Machine:**	JLT-CHPTV-1
Manufacturer:	TenCate 60 DAYS	**Chk'd By :**	JB
Spec Value:	20 gpm/sq ft MARV		

HEAD ACROSS SPECIMEN:	**5.08 cm**	**SAMP. AREA:**	**44.096 cm^2**
WATER TEMPERATURE:	**18.0 Degrees C**	**TEMP CORR.**	**1.0510**

COUPON	REPLICATE	FLOW cm^3	TIME sec	FLOW gal/min/ft^2	PERMITTIVITY sec-1
23 Degrees C Replicate 1	1	1205.5	18.50	21.8	0.306
	2	1208.0	18.46	21.9	0.307
	3	1196.7	18.50	21.6	0.303
	4	1203.3	18.60	21.6	0.304
	5	1196.4	18.43	21.7	0.305
23 Degrees C Replicate 2	1	1060.2	16.44	21.5	0.303
	2	1181.2	18.32	21.5	0.303
	3	1061.2	16.50	21.5	0.302
	4	1054.7	16.47	21.4	0.300
	4	1073.4	16.56	21.7	0.304
			Average :	21.6	0.304

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PERMITTIVITY OF GEOTEXTILES

CONSTANT HEAD METHOD

ASTM D-4491 (Also meets D2434 Criteria for permeability)

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell Site	**Report Date :**	03/30/09
Material:	Geotextile - GT500	**Technician:**	RL
Sample ID:	Supplied Sample	**Machine:**	JLT-CHPTV-1
Manufacturer:	TenCate 60 DAYS	**Chk'd By :**	JB
Spec Value:	20 gpm/sq ft MARV		

HEAD ACROSS SPECIMEN:	**5.08 cm**	**SAMP. AREA:**	**44.096 cm^2**
WATER TEMPERATURE:	**18.0 Degrees C**	**TEMP CORR.**	**1.0510**

COUPON	REPLICATE	FLOW cm^3	TIME sec	FLOW gal/min/ft^2	PERMITTIVITY sec-1
50 Degrees C Replicate 1	1	1287.1	19.38	22.2	0.312
	2	1310.2	19.47	22.5	0.316
	3	1301.2	19.43	22.4	0.314
	4	1300.8	19.38	22.4	0.315
	5	1306.5	19.34	22.6	0.317
50 Degrees C Replicate 2	1	1230.0	19.34	21.2	0.298
	2	1233.3	19.44	21.2	0.298
	3	1239.3	19.50	21.2	0.298
	4	1226.8	19.28	21.3	0.299
	4	1230.7	19.28	21.3	0.299
			Average :	21.8	0.307

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PERMITTIVITY OF GEOTEXTILES

CONSTANT HEAD METHOD

ASTM D-4491 (Also meets D2434 Criteria for permeability)

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell Site	**Report Date :**	06/29/09
Material:	Geotextile - GT500	**Technician:**	RL
Sample ID:	Supplied Sample	**Machine:**	JLT-CHPTV-1
Manufacturer:	TenCate 90 DAYS	**Chk'd By :**	JB
Spec Value:	20 gpm/sq ft MARV		

HEAD ACROSS SPECIMEN:	**5.08 cm**		**SAMP. AREA:**	**44.096 cm^2**
WATER TEMPERATURE:	**18.0**	**Degrees C**	**TEMP CORR.**	**1.0510**

COUPON	REPLICATE	FLOW cm^3	TIME sec	FLOW gal/min/ft^2	PERMITTIVITY sec-1
23 Degrees C Replicate 1	1	1314.0	15.26	28.8	0.404
	2	1319.0	15.31	28.8	0.404
	3	1318.0	15.29	28.8	0.404
	4	1321.0	15.33	28.8	0.404
	5	1323.0	15.37	28.8	0.404
23 Degrees C Replicate 2	1	1312.0	15.46	28.4	0.398
	2	1309.0	15.39	28.4	0.399
	3	1312.0	15.42	28.4	0.399
	4	1315.0	15.47	28.4	0.399
	4	1319.0	15.57	28.3	0.397
			Average :	28.6	0.401

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PERMITTIVITY OF GEOTEXTILES

CONSTANT HEAD METHOD

ASTM D-4491 (Also meets D2434 Criteria for permeability)

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell Site	**Report Date :**	06/29/09
Material:	Geotextile - GT500	**Technician:**	RL
Sample ID:	Supplied Sample	**Machine:**	JLT-CHPTV-1
Manufacturer:	TenCate 90 DAYS	**Chk'd By :**	JB
Spec Value:	20 gpm/sq ft MARV		

HEAD ACROSS SPECIMEN:	**5.08 cm**		**SAMP. AREA:**	**44.096 cm^2**
WATER TEMPERATURE:	**18.0**	**Degrees C**	**TEMP CORR.**	**1.0510**

COUPON	REPLICATE	FLOW cm^3	TIME sec	FLOW gal/min/ft^2	PERMITTIVITY sec-1
50 Degrees C Replicate 1	1	1277.0	17.44	24.5	0.344
	2	1279.0	17.45	24.5	0.344
	3	1275.0	17.41	24.5	0.344
	4	1281.0	17.52	24.4	0.343
	5	1282.0	17.53	24.4	0.343
50 Degrees C Replicate 2	1	1288.0	17.39	24.7	0.348
	2	1294.0	17.42	24.8	0.349
	3	1295.0	17.43	24.8	0.349
	4	1289.0	17.39	24.8	0.348
	4	1297.0	17.44	24.8	0.349
			Average :	24.6	0.346

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PERMITTIVITY OF GEOTEXTILES

CONSTANT HEAD METHOD

ASTM D-4491 (Also meets D2434 Criteria for permeability)

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell Site	**Report Date :**	06/29/09
Material:	Geotextile - GT500	**Technician:**	RL
Sample ID:	Supplied Sample	**Machine:**	JLT-CHPTV-1
Manufacturer:	TenCate 120 DAYS	**Chk'd By :**	JB
Spec Value:	20 gpm/sq ft MARV		

HEAD ACROSS SPECIMEN:	**5.08 cm**	**SAMP. AREA:**	**44.096 cm^2**
WATER TEMPERATURE:	**18.0 Degrees C**	**TEMP CORR.**	**1.0510**

COUPON	REPLICATE	FLOW cm^3	TIME sec	FLOW gal/min/ft^2	PERMITTIVITY sec-1
23 Degrees C Replicate 1	1	1314.0	15.45	28.4	0.399
	2	1316.0	15.51	28.3	0.398
	3	1315.0	15.49	28.4	0.398
	4	1315.0	15.47	28.4	0.399
	5	1317.0	15.51	28.4	0.398
23 Degrees C Replicate 2	1	1312.0	15.52	28.2	0.397
	2	1312.0	15.51	28.3	0.397
	3	1309.0	15.44	28.3	0.398
	4	1313.0	15.53	28.2	0.397
	4	1312.0	15.49	28.3	0.397
			Average :	28.3	0.398

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PERMITTIVITY OF GEOTEXTILES

CONSTANT HEAD METHOD

ASTM D-4491 (Also meets D2434 Criteria for permeability)

Client:	Parsons	**Job No.:**	09LR1826.01
Project:	Honeywell Site	**Report Date :**	06/29/09
Material:	Geotextile - GT500	**Technician:**	RL
Sample ID:	Supplied Sample	**Machine:**	JLT-CHPTV-1
Manufacturer:	TenCate 120 DAYS	**Chk'd By :**	JB
Spec Value:	20 gpm/sq ft MARV		

HEAD ACROSS SPECIMEN:	**5.08 cm**	**SAMP. AREA:**	**44.096 cm^2**
WATER TEMPERATURE:	**18.0 Degrees C**	**TEMP CORR.**	**1.0510**

COUPON	REPLICATE	FLOW cm^3	TIME sec	FLOW gal/min/ft^2	PERMITTIVITY sec-1
50 Degrees C Replicate 1	1	1246.0	17.54	23.7	0.333
	2	1241.0	17.50	23.7	0.333
	3	1235.0	17.49	23.6	0.331
	4	1251.0	17.56	23.8	0.334
	5	1250.0	17.55	23.8	0.334
50 Degrees C Replicate 2	1	1301.0	17.39	25.0	0.351
	2	1305.0	17.42	25.0	0.351
	3	1318.0	17.46	25.2	0.354
	4	1311.0	17.53	25.0	0.351
	4	1310.0	17.49	25.0	0.351
			Average :	24.4	0.342

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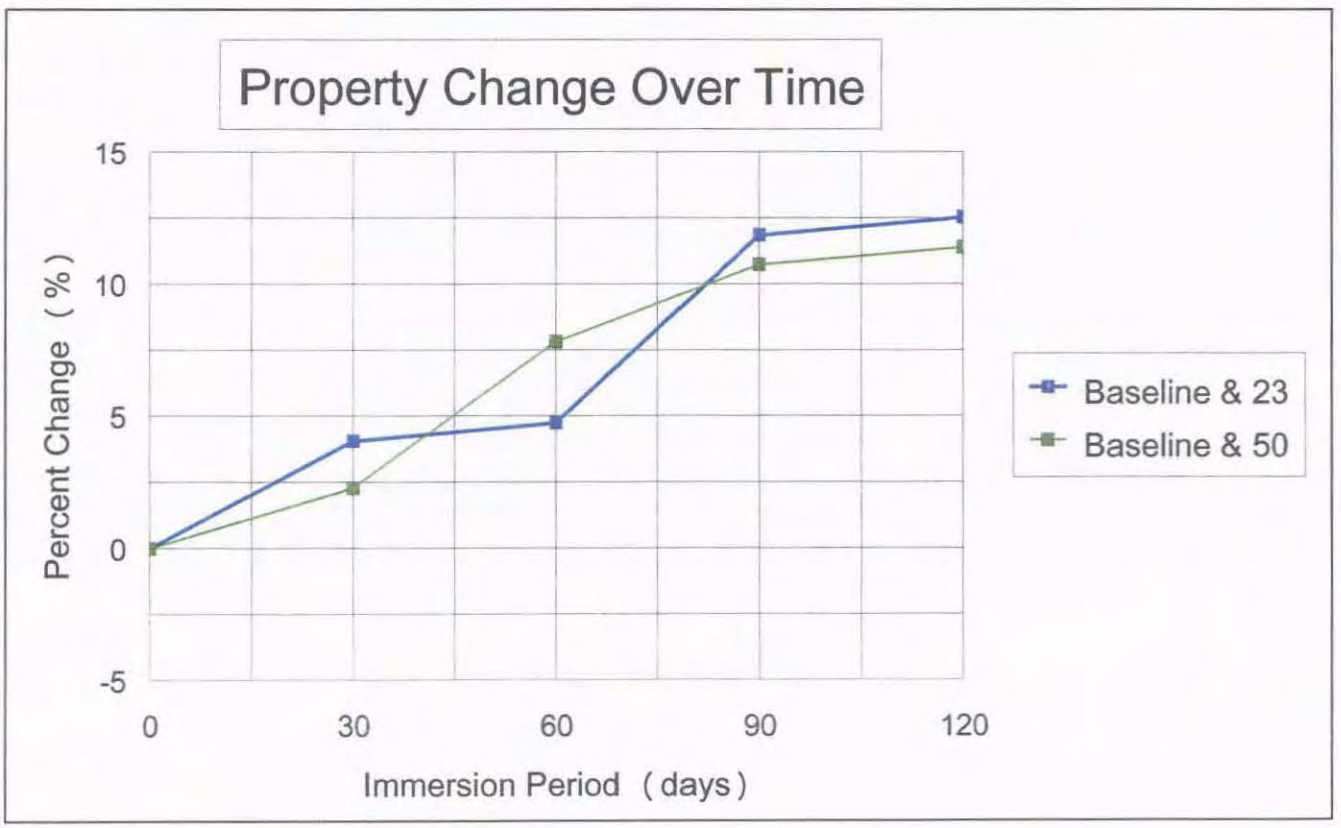
Summary of Test Results

Sewing Thread

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	06/15/2009
Material:	Sewing Thread	Tested By:	RL/AM/MLB
Sample ID:	TenCate Sewing Thread	Checked By:	JB

TEST	Baseline	30-Day Immersion		60-Day Immersion		90-Day Immersion		120-Day Immersion	
READING	Average	Average	% Change	Average	% Change	Average	% Change	Average	% Change
Baseline & 23°C	59.0	61.4	4.07	61.8	4.75	66.0	11.86	66.4	12.54
Baseline & 50°C	61.4	62.8	2.28	66.2	7.82	68.0	10.75	68.4	11.40



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Sewing Thread Test Results

Client:	Parsons	Job No.:	09LR1826.01
Project:	Honeywell	Date:	06/15/2009
Material:	Sewing Thread	Tested By:	RL/AM/MLB
Sample ID:	TenCate Sewing Thread	Checked By:	JB

PARAMETER	UNITS	REPLICATE No.					AVERAGE	STANDARD DEVIATION
		1	2	3	4	5		
Baseline	lbs	58	56	62	59	60	59.0	2.0000
30 Days 23°C	lbs	58	69	61	64	55	61.4	4.8415
30 Days 50°C	lbs	69	69	58	55	63	62.8	5.6710
60 Days 23°C	lbs	66	60	61	60	62	61.8	2.2271
60 Days 50°C	lbs	70	60	66	66	69	66.2	3.4871
90 Days 23°C	lbs	65	67	69	65	64	66.0	1.7889
90 Days 50°C	lbs	68	68	70	69	65	68.0	1.6733
120 Days 23°C	lbs	65	67	67	65	68	66.4	1.2000
120 Days 50°C	lbs	66	68	69	69	70	68.4	1.3565

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