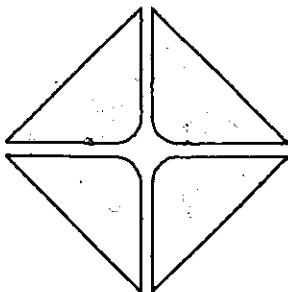


File on eDOCs Yes No
Site Name SINCLAIR REFINERY
Site No. 902003
County ALLIAGANY
Town WELLSVILLE
Foillable Yes No
File Name DOCUMENTS / REPORTS
Scanned & eDOC

report. HW902003. 1993-09. RA - CENTRAL -
LANDFILL - VOL 4.



Prepared for

Atlantic Richfield Company

515 South Flower Street
Los Angeles, California 90071

**REMEDIAL ACTION REPORT
CENTRAL ELEVATED LANDFILL AREA**

**SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK**

VOLUME IV

Prepared by



GEOSYNTEC CONSULTANTS

5775 Peachtree Dunwoody Road
Atlanta, Georgia 30342

Project Number: GQ3201

September 1993

APPENDIX G

CAP PRECONSTRUCTION TESTING

- **POLYFELT TS700 CERTIFICATES OF COMPLIANCE**
- **POLYFELT TS1000 CERTIFICATES OF COMPLIANCE**
- **GEOTEXTILE THREAD CERTIFICATE OF COMPLIANCE**
- **GEOSYNTHETIC CLAY LINER**
 - **Certificates of Compliance**
 - **Warranty Letter Concerning Gas Vent Stone**
- **GEOMEMBRANE**
 - **GeoSyntec Consultants' Conformance Test Data**
 - **Certificates of Compliance**
- **VLDPE WELDING ROD CERTIFICATES OF COMPLIANCE**
- **GEOCOMPOSITE DRAINAGE LAYER CERTIFICATES OF COMPLIANCE**
- **GAS VENT PIPING AND PERFORATIONS**
 - **Data**
 - **Certificate of Compliance**

APPENDIX G (continued)

- **MONITORING WELLS, PIEZOMETERS, AND PIPE SLEEVES**
 - **Monitoring Well and Piezometer Certificates of Compliance**
 - **Pipe Sleeve Certificates of Compliance**
 - **Monitoring Well, Piezometer, and Pipe Sleeve Covers**
- **CORRUGATED METAL CULVERT PIPE AND FLAP GATE**
- **FENCE AND GATES**
 - **Alignment**
 - **Certificates of Compliance**
 - **Posts and Braces**
 - **Fabric**
 - **Miscellaneous Fittings**
 - **Bollard Detail**
- **GAS VENT STONE**
 - **Submittal Information**
 - **Geotechnical Tests**
 - **Chemical Analyses**
- **COMMON FILL - BAKERS OF JERICHO HILL**
 - **Chemical Analyses**

APPENDIX G (continued)

- **COMMON FILL - WAYNE GRAVEL PRODUCTS INC.**
 - Submittal Information
 - Geotechnical Tests
 - Chemical Analyses
- **TOPSOIL**
 - Submittal Information
 - Geotechnical Tests
 - Chemical Analyses
- **AGGREGATE SUBBASE FOR ACCESS ROAD**
 - Submittal Information
 - Geotechnical Tests
- **BEDDING STONE**
 - Submittal Information
 - Gradation Analyses
 - Chemical Analyses
- **RIP RAP**
 - Submittal Information
 - Geotechnical Tests
 - Chemical Analyses
- **SEED ANALYSIS**

POLYFELT TS700
CERTIFICATES OF COMPLIANCE

F1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 9
CONTRACT NO. C91028-003-01
GEOTEXTILE CERTIFICATES OF COMPLIANCE - TS 700
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700



Werkstoff

Polyfelt

September 9, 1992

Geo-Con
4075 Monroeville Blvd.
Corporate One Bldg.II Ste 400
Monroe, PA 15146

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
RE: Polyfelt Order #6111 Arco Landfill

Dear Mr. Bailey

This letter certifies that POLYFELT TS700, shipped FOB Evergreen, Alabama, on 8/24/92, includes rolls from Lot # 20102 manufactured by Polyfelt, Inc., which meet or exceed product requirements:

<u>PROPERTY</u>	<u>TEST PROCEDURE</u>	<u>MINIMUM⁽¹⁾</u>
Weight	ASTM D 3776	7.9 oz/yd ²
Thickness	ASTM D 5199	90* Mil
Grab Strength	ASTM D 4632	210 lbs
Grab Elongation	ASTM D 4632	50 %
Tear Strength	ASTM D 4533	85 lbs
Mullen Burst	ASTM D 3786	320 psi
Puncture Resistance	ASTM D 4833	100 lbs
A.O.S.	ASTM D 4751	.210* mm (70) US Sieve
Fermittivity	ASTM D 4491	1.2* sec ⁻¹
Water Permeability	ASTM D 4491	0.30* cm/sec
Water Flow Rate	ASTM D 4491	85* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

(1) Values in weaker principle direction. All minimum values represent minimum average roll values (i.e. test results from any sampled roll in a lot, tested in accordance with ASTM D 4759-88 shall meet or exceed the minimum values listed.)

* At time of manufacturing; handling may change these property values.

(2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

Polyfelt, Inc.

P.O. Box 727
200 Miller T. Sellers Drive
Evergreen, Alabama 36401

Tel. 205-678-4760
Fax 205-578-4963



Werkstoff

Polyfelt

September 9, 1992

Geo-Con
4075 Monroeville Blvd.
Corporate One Bldg.II Ste 400
Monroe, PA 15146

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
RE: Polyfelt Order #6111 Arco Landfill

Dear Mr. Bailey

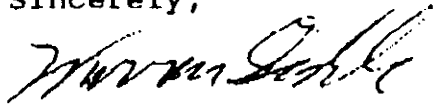
This letter certifies that POLYFELT TS700, shipped FOB
Evergreen, Alabama, on 8/24/92, includes rolls from Lot #
20019, manufactured by Polyfelt, Inc., which meet or exceed
product requirements:

PROPERTY	TEST PROCEDURE	MINIMUM ⁽¹⁾
Weight	ASTM D 3776	7.9 oz/yd ²
Thickness	ASTM D 5199	90* Mil
Grab Strength	ASTM D 4632	210 lbs
Grab Elongation	ASTM D 4632	50 %
Tear Strength	ASTM D 4533	85 lbs
Mullen Burst	ASTM D 3786	320 psi
Puncture Resistance	ASTM D 4833	100 lbs
A.O.S.	ASTM D 4751	.210* mm (70) US Sieve
Permittivity	ASTM D 4491	1.3* sec ⁻¹
Water Permeability	ASTM D 4491	0.30* cm/sec
Water Flow Rate	ASTM D 4491	100* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

- (1) Values in weaker principle direction. All minimum values represent minimum average roll values (i.e. test results from any sampled roll in a lot, tested in accordance with ASTM D 4759-88 shall meet or exceed the minimum values listed.)
- * At time of manufacturing; handling may change these property values.
- (2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,


Applications Engineer

Polyfelt, Inc.

P.O. Box 727
200 Miller T. Sellers Drive
Evergreen, Alabama 36401

Tel 205-678-4756
Fax 205-678-4883

POLYVELT, INC.
PACKING LIST

7/30/82

Page 1

ORDER NO 6106

LINE NUMBER	ITEM NUMBER	ROLL NUMBER
1	TS70018036011B	2501213
2	TS70018036011B	2501214
3	TS70018036011B	2501228
4	TS70018036011B	2501235
5	TS70018036011B	2501241
6	TS70018036011B	2501248
7	TS70018036011B	2501279
8	TS70018036011B	2501287
9	TS70018036011B	2501293
10	TS70018036011B	2501299
11	TS70018036011B	2501307
12	TS70018036011B	2501308
13	TS70018036011B	2501311
14	TS70018036011B	2501312
15	TS70018036011B	2501315
16	TS70018036011B	2501333
17	TS70018036011B	2501340
18	TS70018036011B	2501341
19	TS70018036011B	2501345
20	TS70018036011B	2501346
21	TS70018036011B	2501348
22	TS70018036011B	2501355
23	TS70018036011B	2501366
24	TS70018036011B	2501367
25	TS70018036011B	2501368
26	TS70018036011B	2501380
27	TS70018036011B	2501382
28	TS70018036011B	2501383
29	TS70018036011B	2501385
30	TS70018036011B	2501386
31	TS70018036011B	2501388
32	TS70018036011B	2501370
33	TS70018036011B	2501371
34	TS70018036011B	2501372
35	TS70018036011B	2501373
36	TS70018036011B	2501374
37	TS70018036011B	2501376
38	TS70018036011B	2501378
39	TS70018036011B	2501379
40	TS70018036011B	2501380
41	TS70018036011B	2501381
42	TS70018036011B	2501382
43	TS70018036011B	2501383
44	TS70018036011B	2501384
45	TS70018036011B	2501385
46	TS70018036011B	2501386
47	TS70018036011B	2501387
48	TS70018036011B	2501388
49	TS70018036011B	2501389
50	TS70018036011B	2501390
51	TS70018036011B	2501391
52	TS70018036011B	2501392

POLYFEIT. INC.
PACKING LIST

7/30/82

Page 2

ORDER NO 6106

LINE NUMBER	ITEM NUMBER	ROLL NUMBER
53	TS70018036011B	2501394
54	TS70018036011B	2501395
55	TS70018036011B	2501396
56	TS70018036011B	2501397
57	TS70018036011B	2501398
58	TS70018036011B	2501399
59	TS70018036011B	2501400
60	TS70018036011B	2501459

TOTAL ROLLS FOR TS70018036011B 60

TOTAL ROLLS FOR ORDER 60

POLYFELT, INC.
PACKING LIST

8/04/92

Page 1

ORDER NO 6107

LINE NUMBER	ITEM NUMBER	ROLL NUMBER
1	TS70018036011B	2501434
2	TS70018036011B	2501681
3	TS70018036011B	2501888
4	TS70018036011B	2501687
5	TS70018036011B	2501694
6	TS70018036011B	2501695
7	TS70018036011B	2501699
8	TS70018036011B	2501700
9	TS70018036011B	2501702
10	TS70018036011B	2501704
11	TS70018036011B	2501705
12	TS70018036011B	2501707
13	TS70018036011B	2501708
14	TS70018036011B	2501709
15	TS70018036011B	2501710
16	TS70018036011B	2501711
17	TS70018036011B	2501712
18	TS70018036011B	2501714
19	TS70018036011B	2501716
20	TS70018036011B	2501718
21	TS70018036011B	2501719
22	TS70018036011B	2501722
23	TS70018036011B	2501723
24	TS70018036011B	2501724
25	TS70018036011B	2501725
26	TS70018036011B	2501726
27	TS70018036011B	2501729
28	TS70018036011B	2501730
29	TS70018036011B	2501733
30	TS70018036011B	2501734
31	TS70018036011B	2501745
32	TS70018036011B	2501819
33	TS70018036011B	2501820
34	TS70018036011B	2501822
35	TS70018036011B	2501823
36	TS70018036011B	2501824
37	TS70018036011B	2501825
38	TS70018036011B	2501826
39	TS70018036011B	2501827
40	TS70018036011B	2501828
41	TS70018036011B	2501829
42	TS70018036011B	2501830
43	TS70018036011B	2501832
44	TS70018036011B	2501833
45	TS70018036011B	2501834
46	TS70018036011B	2501836
47	TS70018036011B	2501837
48	TS70018036011B	2501838
49	TS70018036011B	2501839
50	TS70018036011B	2501840
51	TS70018036011B	2501843
52	TS70018036011B	2501844

Post-it - brand fax transmittal memo 7871

To: JESSICA

From: KANIELLE

File- 593-7882

Page: 1 of 1

POLYFELT, INC.
PACKING LIST

8/04/92

Page 2

ORDER NO 6107

LINE NUMBER	ITEM NUMBER	ROLL NUMBER
53	TS70018036011B	2501845
54	TS70018038011B	2501846
55	TS70018036011B	2501847
56	TS70018038011B	2501852
57	TS70018036011B	2501897
58	TS70018038011B	2501901
59	TS70018036011B	2501904
60	TS70018036011B	2501908

TOTAL ROLLS FOR TS70018038011B 80

TOTAL ROLLS FOR ORDER 60

ORDER NO 6100

LINE NUMBER	ITEM NUMBER	ROLL NUMBER
1	TS70018036011B	2501227
2	TS70018036011B	2501247
3	TS70018036011B	2501249
4	TS70018036011B	2501250
5	TS70018036011B	2501252
6	TS70018036011B	2501253
7	TS70018036011B	2501254
8	TS70018036011B	2501255
9	TS70018036011B	2501256
10	TS70018036011B	2501257
11	TS70018036011B	2501259
12	TS70018036011B	2501273
13	TS70018036011B	2501274
14	TS70018036011B	2501284
15	TS70018036011B	2501349
16	TS70018036011B	2501404
17	TS70018036011B	2501405
18	TS70018036011B	2501432
19	TS70018036011B	2501493
20	TS70018036011B	2501525
21	TS70018036011B	2501532
22	TS70018036011B	2501539
23	TS70018036011B	2501541
24	TS70018036011B	2501544
25	TS70018036011B	2501545
26	TS70018036011B	2501574
27	TS70018036011B	2501575
28	TS70018036011B	2501640
29	TS70018036011B	2501679
30	TS70018036011B	2501680
31	TS70018036011B	2501682
32	TS70018036011B	2501683
33	TS70018036011B	2501685
34	TS70018036011B	2501688
35	TS70018036011B	2501689
36	TS70018036011B	2501690
37	TS70018036011B	2501691
38	TS70018036011B	2501692
39	TS70018036011B	2501693
40	TS70018036011B	2501696
41	TS70018036011B	2501701
42	TS70018036011B	2501703
43	TS70018036011B	2501706
44	TS70018036011B	2501713
45	TS70018036011B	2501727
46	TS70018036011B	2501731
47	TS70018036011B	2501741
48	TS70018036011B	2501742
49	TS70018036011B	2501743
50	TS70018036011B	2501744
51	TS70018036011B	2501746
52	TS70018036011B	2501757

5/05/92

EW 6100 0100

Page 2

ORDER NO 6100

LINE NUMBER	ITEM NUMBER	ROLL NUMBER
53	TS70018036011B	2501954
54	TS70018036011B	2501957
55	TS70018036011B	2501958
56	TS70018036011B	2501959
57	TS70018036011B	2501960

TOTAL ROLLS FOR TS70018036011B 57

TOTAL ROLLS FOR ORDER 57

08-17-92 17:37

205 378 1983

POLYFELT EVERGR.

002

POLYFELT, INC.
PACKING LIST

8/13/92

Page 1

ORDER NO 8111

LINE NUMBER	ITEM NUMBER	ROLL NUMBER
1	TS70018036012B	0208986
2	TS70018036012B	2501430
3	TS70018036012B	2501479
4	TS70018036012B	2501629
5	TS70018036012B	2501669
6	TS70018036012B	2501739
7	TS70018036012B	2501802
8	TS70018036012B	2501807
9	TS70018036012B	2501808
10	TS70018036012B	2501920

TOTAL ROLLS FOR TS70018036012B 10

TOTAL ROLLS FOR ORDER 10

POLYFELT. INC.
PACKING LIST

8/13/92

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ORDER NO 6473

LINE NUMBER	ITEM NUMBER	ROLL NUMBER
1	TS70018036011B	2501197
2	TS70018036011B	2501205
3	TS70018036011B	2501756

TOTAL ROLLS FOR TS70018036011B 3

TOTAL ROLLS FOR ORDER 3

09/10/92

POLYFELT, INC.
QA LABORATORY
EVINGDALE, ALABAMAPROJ. GRADE: TS 700
LOT NUMBER: 20102
COLOR: BEIGE
ROLL DIM.: 15 x 360

TEST ROLLS LOT SUMMARY

Page No. 1

GRID TENSILE/ELONGATION														
ASTM D4632														
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	H.D.		C.D.		H. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TEAR		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS		
			ASTM D4533 MD (lbs)	ASTM D4533 CD (lbs)	ASTM D 4491 WATER				A.O.S. ASTM D4751 (mm)					
					PERMIT. (sec-1)	PERM.(Kv) (cm/sec)				FLOW (gpm/ft2)				
2501197	07/26/92	10.2	301.3	155.0	338.0	87.0	466.1							
2501198	07/26/92	10.2					450.1							
2501199	07/26/92	10.3					417.2							
2501204	07/26/92	10.3	292.5	160.0	324.0	92.0	419.1							
2501220	07/27/92	9.6	294.8	169.0	342.2	75.0	434.1	139.3		0.141				
2501221	07/26/92	10.2	303.3	121.0	362.7	73.0	427.6							
2501222	07/26/92	10.4	310.3	150.0	344.9	67.0	427.5							
2501223	07/26/92	10.1	310.7	132.0	338.4	74.0	425.2							
2501227	07/26/92	10.1	320.6	120.0	331.4	68.0	409.9							
2501232	07/26/92	10.6	317.3	124.0	358.4	77.0	444.6							
2501251	07/26/92	10.1	336.2	131.0	345.6	77.0	415.6							
2501252	07/26/92	10.0	339.1	134.0	354.8	73.0	404.8							
2501253	07/26/92	10.1	358.0	125.0	343.8	71.0	419.4							
2501258	07/26/92	10.0	330.1	131.0	317.9	66.0	422.7							
2501263	07/26/92	10.1	312.3	131.0	354.4	76.0	431.7							
2501279	07/27/92	10.0	321.1	169.0	344.5	90.0	405.9							
2501281	07/27/92	10.2	255.8	142.0	284.2	69.0	368.3							
2501283	07/27/92	9.3	267.1	148.0	286.9	66.0	372.8							
2501284	07/27/92	9.1	282.4	159.0	281.9	71.0	367.6							
2501285	07/27/92	10.4	300.8	154.0	328.3	88.0	399.4							
2501286	07/31/92	9.9									1.32	0.327	98.6	
2501290	07/27/92	10.2	283.5	146.0	315.0	73.0	386.2							
2501305	07/28/92	9.7	309.8	171.0	322.2	71.0	386.4							
2501322	07/28/92	9.6	281.5	172.0	329.9	85.0	395.9							
2501323	07/28/92	9.5	277.0	157.0	324.5	79.0	380.9							
2501343	07/28/92	8.9	262.4	172.0	288.0	77.0	360.8							

GRAB TENSILE/ELONGATION															
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	ASTM D4632				M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. TEAR		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS			
			M.D.		C.D.				ASTM D4533			ASTM D 4491		WATER FLOW (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			TENSILE ELONG. (lbs)	TENSILE ELONG. (%)	TENSILE ELONG. (lbs)	TENSILE ELONG. (%)			MD	CD		PERMIT. (sec-1)	PERM.(Kv) (cm/sec)		
2501361	07/28/92	9.3	273.4	167.0	293.0	82.0									
2501380	07/28/92	9.0	271.4	165.0	288.9	92.0									
2501401	07/28/92	9.7	288.0	162.0	322.4	86.0	377.8	127.1	137.4	140.4	0.129				
2501419	07/28/92	9.6	302.2	157.0	307.1	73.0	397.9								
2501437	07/28/92	8.9	298.1	151.0	324.0	84.0	385.2								
2501455	07/29/92	9.3	315.0	123.0	322.4	65.0	395.4								
2501461	07/29/92	10.3	282.2	121.0	313.4	61.0	414.1								
2501462	07/29/92	9.7	253.6	123.0	274.5	56.0	377.1								
2501466	07/29/92	10.1	268.0	155.0	286.2	67.0	388.5								
2501467	07/30/92	9.7	296.3	118.0	315.0	63.0	380.0	138.3	127.1	119.9	0.116	1.18	0.322	88.4	
2501488	07/30/92	10.0	264.8	133.0	311.6	68.0	398.3								
2501489	07/30/92	9.6	277.2	131.0	309.8	70.0	372.2								
2501490	07/30/92	9.9	265.7	156.0	292.7	70.0	426.1								
2501495	07/30/92	9.6	266.0	134.0	294.8	60.0	393.9								
2501500	07/30/92	9.8	258.1	139.0	313.7	76.0	410.5								
2501520	07/30/92	9.4	277.0	157.0	310.5	79.0	378.7								
2501534	07/30/92	10.1	259.4	127.0	286.9	62.0	419.7								
2501543	07/30/92	9.2	255.2	128.0	291.2	63.0	370.0								
2501546	07/30/92	10.0													
2501547	07/30/92	9.9	257.9	127.0	298.1	64.0	397.5								
2501549	07/30/92	9.7													
2501551	07/30/92	10.1	262.8	121.0	298.1	63.0	376.6								
2501561	07/30/92	9.6													
2501563	07/30/92	10.5	271.8	123.0	331.2	66.0	408.1	139.5	113.8	136.7	0.123				
2501574	07/30/92	9.8	270.9	129.0	313.9	65.0	399.5								
2501578	07/30/92	9.9	275.9	127.0	316.8	69.0	383.0								
2501591	07/30/92	9.6	298.6	131.0	332.6	66.0	370.3								
2501598	07/30/92	10.3	295.9	130.0	333.5	68.0	398.3	143.4	123.5	125.5	0.131				
2501603	07/31/92	9.4	264.4	127.0	308.9	68.0	380.1								
2501605	07/31/92	9.4	305.1	142.0	331.2	69.0	354.8								
2501610	07/31/92	9.7	300.4	138.0	320.9	88.0	400.8								
2501615	07/31/92	10.1	298.6	178.0	346.3	86.0	433.3								

GRAB TENSILE/ELONGATION															
ASTM D4632															
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	W.D.		C.D.		M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. TEAR ASTM D4533		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS			A.O.S. ASTM D4751 (mm)
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)			MD (lbs)	CD (lbs)		ASTM D 4491 PERMIT. (sec-1)	PERM. (cm/sec)	FLOW (gpm/ft2)	
2501903	08/02/92	9.0	243.0	111.0	285.1	52.0	386.5								
2501905	08/02/92	9.7	265.7	105.0	291.2	52.0	407.3								
2501911	08/02/92	9.7	283.5	118.0	315.2	52.0	422.9								
2501912	08/02/92	9.4	268.0	109.0	325.1	53.0	425.7								
2501913	08/02/92	9.6	272.0	115.0	295.4	53.0	416.5								
2501918	08/02/92	9.5	272.5	105.0	300.2	50.0	414.6								
2501923	08/02/92	9.3	263.7	112.0	304.4	52.0	393.0								
2501941	08/02/92	9.7	264.2	111.0	311.4	56.0	388.7								
2501962	08/03/92	10.1	279.7	125.0	316.4	61.0	413.3								
2501964	08/03/92	9.7	291.6	130.0	326.7	59.0	399.3								
2501965	08/03/92	9.7	270.9	132.0	312.1	72.0	408.8								
2501966	08/03/92	9.9	250.2	157.0	317.5	62.0	394.8								
2501967	08/03/92	9.8	251.8	140.0	306.9	59.0	391.2								
2501968	08/03/92	9.7	264.6	145.0	312.5	73.0	392.1								
2501973	08/03/92	10.1	257.6	136.0	304.7	71.0	406.4	142.8	117.9	127.6	0.124	1.42	0.374	106.0	0.150
2501978	08/03/92	9.8	246.4	138.0	304.9	65.0	399.9								
2501998	08/03/92	10.2	264.6	117.0	314.3	55.0	418.2	140.9	107.9	139.3	0.110	1.43	0.368	112.8	0.125
2502001	08/03/92	9.6	269.6	121.0	302.4	56.0	399.8								
2502002	08/03/92	11.1	271.6	117.0	322.2	59.0	431.3								
2502003	08/03/92	10.8	269.1	122.0	313.0	60.0	430.4								
2502010	08/03/92	9.6	259.7	121.0	324.2	54.0	373.3	135.3	130.0	141.9	0.117	1.19	0.337	89.0	0.125
2502028	08/03/92	9.1	268.9	132.0	299.3	58.0	359.6	135.0	116.2	124.9	0.120	1.43	0.395	107.3	0.138
2502046	08/03/92	9.7	255.8	119.0	317.9	57.0	409.2	125.0	137.2	141.3	0.116	1.35	0.375	101.1	0.150
2502067	08/04/92	8.9	258.5	139.0	305.6	70.0	378.3								
2502068	08/04/92	9.3	254.3	122.0	315.5	77.0	362.3	143.2	122.4	129.0	0.112	1.31	0.337	97.6	0.150
2502069	08/04/92	8.8	266.2	150.0	318.4	85.0	370.1								
2502074	08/04/92	9.2	244.8	147.0	299.3	92.0	355.8								
2502075	08/04/92	9.4	263.0	143.0	325.1	85.0	383.9								
2502076	08/04/92	9.5	256.3	153.0	309.6	63.0	375.7								
2502081	08/04/92	9.1	254.7	132.0	306.9	69.0	372.5								
2502093	08/05/92							147.8	103.3	120.8	0.117	1.49	0.345	111.4	0.125
2502109	08/04/92	9.4	248.2	124.0	297.2	62.0	359.7								

GRAB TENSILE/ELONGATION															
ASTM D4632															
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	M.D.		C.D.		M. BURST ASTM D3786 (psi)	PUNCTURE	TEAR. TEAR		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS ASTM D 4491			A.O.S. ASTM D4751 (mm)
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)		RESISTANCE	ASTM D4533			PERMEY. (sec-1)	PERM.(Kv) (cm/sec)	FLOW (gpm/ft2)	
								ASTM D4833 (lbs)	MD	CD					
2502113	08/05/92							156.3	105.6	117.7	0.121	1.54	0.384	114.8	0.138
2502123	08/04/92	9.3	269.3	117.0	308.5	68.0	377.9								
2502131	08/04/92	9.3	264.4	126.0	324.0	61.0	389.3								
2502132	08/05/92	8.6	281.9	129.0	267.3	74.0	338.9	118.1	125.0	45.9		1.43	0.365	107.2	0.125
2502135	08/05/92	8.6	245.9	126.0	283.3	62.0	354.0								
2502136	08/05/92	8.9	244.6	122.0	279.9	64.0	355.1								
2502137	08/05/92	9.2	235.4	119.0	279.2	66.0	357.5								
2502145	08/05/92	8.8	238.7	127.0	292.3	71.0	346.8								
2502148	08/11/92							115.1	114.2	26.2		1.48	0.359	110.8	0.125
2502155	08/06/92	9.2	264.6	134.0	305.6	62.0	378.4								
2502159	08/07/92	8.7	247.1	147.0	298.8	74.0	365.3								
2502160	08/07/92	8.8	273.2	178.0	296.8	69.0	377.3								
2502161	08/07/92	9.1	235.1	118.0	300.8	64.0	408.7								
2502172	08/07/92	9.1	264.4	116.0	329.4	61.0	397.1								
2502173	08/07/92	9.2	286.2	126.0	338.9	60.0	405.6								
2502174	08/07/92	9.3	251.8	121.0	322.0	57.0	431.1								
2502178	08/07/92	9.3	245.5	122.0	338.4	61.0	407.5								
2502188	08/07/92	9.4	243.9	126.0	326.0	60.0	444.3								
AVERAGE =		9.7	278.2	132.2	314.3	67.8	397.5	137.3	120.5	120.2	0.122	1.38	0.357	103.8	0.135
STD. DEVIATION =		0.5	23.3	17.5	28.3	10.1	24.7	11.0	10.2	34.2	0.009	0.11	0.023	8.9	0.012

09/10/92

POLYMER, INC.
QA/QC LABORATORY
EVERGREEN, ALABAMA

PRODUCT GRADE: TS 700

LOT NUMBER: 20019

COLOR: BKIGE

ROLL DIM.: 15 x 360

TEST ROLLS LOT SUMMARY

Page No. 1

ROLL NO.	TEST DATE	GEN. TENSILE/ELONGATION						PUNCTURE		TEAR		HYDRAULIC TESTS			
		ASTM D4632						RESISTANCE	ASTM D4833	ASTM D4533	THICKNESS	ASTM D 4491 WATER			R.O.S.
		WEIGHT	M.D.	C.D.	N. BURST	ASTM D3776	ASTM D4833					PERMIT. PERM. (Kv)	FLOW	ASTM D4751	
		(oz/yd ²)	(lbs)	(%)	(lbs)	(psi)	(lbs)				(in.)	(sec-1)	(cm/sec)	(gpm/ft ²)	(mm)
208000	03/11/92	8.2	231.3	99.0	266.0	55.0	372.3								
208001	03/11/92	8.0	250.4	98.0	266.6	52.0	339.8								
208002	03/11/92	8.0	239.6	101.0	264.8	52.0	345.6								
208009	03/11/92	8.4	241.9	107.0	275.9		366.3								
208010	03/11/92	8.0	249.3	81.0	275.2	40.0	339.4	122.4	113.3	106.8	0.098				0.151
208015	03/11/92	8.3	253.6	108.0	268.9	55.0	360.7								
208026	03/11/92	8.1	244.8	106.0	273.6	54.0	359.2	119.4				1.56	0.415	116.4	
208035	03/12/92	8.4	260.1	81.4	299.5	43.0	375.2	138.0	130.9	113.5	0.102				
208036	03/12/92	8.3	257.6	106.0	272.5	55.0	358.6								
208050	03/12/92	8.4	256.3	112.0	275.6	54.0	377.5	117.4				1.56	0.379	116.7	
208066	03/12/92	7.9	247.3	106.0	279.0	57.0	358.1	118.3				1.44	0.376	107.8	
208080	03/12/92	8.1	248.9	105.0	260.1	55.0	359.1	120.9				1.56	0.408	116.4	
208093	03/12/92	8.5	256.1	79.0	287.3	43.0	377.5	112.7	148.4	115.5	0.100				
208094	03/12/92	8.1	247.3	106.0	270.9	53.0	371.8								
208108	03/12/92	8.4	222.3	109.0	240.8	69.0	358.3								
208109	03/12/92	8.2	251.6	112.0	283.5	66.0	352.2								
208110	03/12/92	8.2	232.9	112.0	281.7	64.0	370.1	122.9				1.75	0.460	131.2	
208115	03/12/92	8.4	223.4	112.0	261.7	57.0	356.7								
208120	03/12/92	8.6	238.5	113.0	273.8	62.0	376.2								
208128	03/12/92	8.7	240.5	110.0	291.6	61.0	368.6	115.8				1.96	0.471	147.3	
208140	03/12/92	8.2	236.9	110.0	264.6	59.0	363.7								
208144	03/12/92	8.0	244.1	80.3	285.0	65.1	346.3								
208145	03/13/92	8.1	252.0	84.0	279.1	42.7	359.4	140.3	131.9	136.2	0.120				
208158	03/12/92	8.1	228.4	82.3	262.8	44.0	358.8								
208173	03/12/92	8.5	238.1	114.0	259.0	57.0	378.6								
208180	03/13/92	7.9	221.0	106.0	243.7	52.0	364.7								

GRAB TENSILE/ELONGATION															
ASTM D4632															
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	H.B.		C.D.		M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4633 (lbs)	TRAP. TEAR		THICKNESS ASTM B1777 (in.)	HYDRAULIC TESTS			
			ASTM D3776 (lbs)	TENSILE ELONG. (%)	ASTM D3786 (lbs)	TENSILE ELONG. (%)			ASTM D4533			ASTM D 4491		WATER FLOW (gpm/ft2)	A.O.S. ASTM D4751 (mm)
									NO	CD		PERMIT. (sec-1)	PERM. (Kv) (cm/sec)		
208181	03/12/92	8.2	227.5	110.0	240.3	51.0	370.5								
208184	03/12/92	8.2	233.6	120.0	263.5	61.0	369.0								
208185	03/12/92	8.4	232.0	114.0	244.4	53.0	376.6								
208186	03/13/92	8.4	226.4	107.0	247.3	51.0	350.6	135.7	153.1	134.4	0.122				
208187	03/12/92	8.3	236.3	110.0	264.2	53.0	376.5								
208188	03/12/92	8.3	222.5	111.0	257.4	56.0	362.7								
208193	03/12/92	8.5	236.7	105.0	263.0	57.0	364.1								
208199	03/13/92	8.4	245.0	138.0	270.5	65.0	359.4								
208222	03/13/92	8.7	225.5	126.0			358.1								
208223	03/13/92	8.7	221.4	111.0			347.4								
208224	03/13/92	9.1	242.3	111.0	253.8	57.0	349.3								
208229	03/13/92	8.9	255.8	106.0	270.2	60.0	378.8								
208235	03/13/92	8.5	251.8	115.0	261.0	61.0	356.6								
208244	03/13/92	9.0	244.4	105.0	268.4	61.0	361.3								
208248	03/13/92	8.7	256.1	114.0	280.6	62.0	356.7								
208258	03/14/92	8.9	262.1	113.0	295.0	63.0	368.2								
208259	03/14/92	8.4	241.9	103.0	261.9	57.0	332.7								
208268	03/14/92	8.5	245.9	117.0	268.6	64.0	368.8								
208279	03/14/92	8.6	247.1	106.0	262.0	61.0	354.6								
208281	03/14/92	8.4	234.9	102.0	256.1	53.0	397.0								
208282	03/14/92	8.7	254.9	109.0	274.3	60.0	360.5								
208285	03/14/92	8.2	242.1	105.0	266.6	61.0	338.1								
208286	03/14/92	8.7	225.7	104.0	244.1	55.0	347.6								
208289	03/14/92	8.4	240.5	113.0	251.1	55.0	352.9								
208290	03/14/92	8.2	237.4	106.0	250.0	62.0	341.6								
208291	03/14/92	8.2	236.9	110.0	258.5	60.0	344.9								
208298	03/14/92	8.5	229.5	104.0	234.7	59.0	352.6								
208305	03/14/92	8.4	244.6	109.0	240.5	61.0	354.2								
208313	03/14/92	8.4	253.6	106.0	260.3	62.0	356.5								
208320	03/14/92	8.7	221.0	104.0	251.1	59.0	356.8								
208325	03/14/92	9.1	247.7	112.0	270.5	59.0	364.0								
208328	03/14/92	9.7	241.7	110.0	281.5	60.0	370.8								

GRAB TENSILE/ELONGATION														
ASTM D4632														
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	M.D.		C.D.		M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. TEAR ASTM D4533 MD CD		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS ASTM D 4491 WATER A.O.S. PERMIT. PIERC. (Kv) FLOW ASTM D4751 (sec-1) (cm/sec) (gpm/ft2) (mm)		
			TENSILE ELONG. (%)	TENSILE ELONG. (%)	(lbs)	(%)			(lbs)	(lbs)		(lbs)	(in.)	(sec-1)
208331	03/14/92	9.3	255.2	112.0	283.3	60.0	357.8							
208334	03/14/92	9.1	256.7	114.0	276.5	59.8	378.3							
208337	03/14/92	8.9	244.8	111.8	275.4	60.0	364.4							
208338	03/14/92	9.2	281.7	122.0	278.6	57.0	351.2							
208343	03/14/92	9.2	250.7	107.0	293.8	58.0	382.3							
208346	03/14/92	8.3	223.4	103.0	269.6	55.8	336.2							
208351	03/14/92	8.3	235.4	106.8	264.4	57.0	339.9							
208362	03/14/92	8.7	247.5	111.0	263.7	57.0	348.3					1.61	0.513	120.7
208365	03/14/92	9.1	259.4	108.0	284.6	55.0	382.0							
208366	03/15/92	8.9	245.3	103.0	288.0	59.0	369.8							
208371	03/15/92	9.2	262.4	106.8	285.3	59.0	384.1							
208379	03/15/92	9.0	238.1	104.0	267.1	60.0	357.1							
208392	03/15/92	8.8	236.7	108.0	258.1	57.8	368.2							
208407	03/15/92	8.4	219.8	100.8	250.1	59.8	346.0							
208414	03/15/92	8.7	235.8	106.8	260.8	60.0	367.1							
208418	03/15/92	8.1	231.8	105.0	262.4	62.0	340.0							
208419	03/15/92	8.6	242.8	108.0	263.9	59.0	348.1							
208420	03/15/92	9.3	258.2	111.0	295.0	65.0	370.9							
208421	03/15/92	9.3	260.6	118.8	306.7	61.0	370.3							
208422	03/15/92	9.6	254.3	110.0	301.1	60.8	392.1							
208427	03/15/92	8.6	253.4	116.0	290.7	62.8	351.9							
208434	03/15/92	8.8	242.3	109.8	287.1	60.0	356.9	130.1				1.63	0.435	122.0
208437	03/15/92	8.6	243.0	110.0	279.9	61.0	359.5							
208440	03/15/92	9.2	255.4	111.0	264.4	58.0	354.9							
208442	03/15/92	8.7	238.9	107.0	285.8	63.0	354.9							
208449	03/15/92	8.9	227.5	108.0	261.0	56.0	366.8							
208450	03/16/92	8.8	247.1	107.0	281.5	57.0	363.8	136.5	147.1	118.3	0.111			
208452	03/15/92	8.6	239.9	110.0	266.9	56.8	365.9							
208455	03/15/92	8.5	237.2	118.8	286.8	60.8	349.2							
208460	03/15/92	8.6	232.2	106.0	250.4	54.8	348.9							
208462	03/15/92	8.6	230.9	108.0	258.5	57.0	348.9							
208473	03/15/92	9.0	224.8	107.0	271.6	58.0	380.9							

GRAB TENSILE/ELONGATION																
ASTM D4632																
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	M.D.		C.D.		M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TEAR. TEAR ASTM D4533		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS ASTM D 4491 WATER			A.O.S. ASTM D4751 (mm)	
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)			MD	CD		PERMEY. (sec-1)	PERM. (Kv) (cm/sec)	FLOW (gpm/ft2)		
208476	03/16/92	9.2	242.6	188.0	287.3	58.0	386.6					1.87	0.494	140.1		
208477	03/16/92	9.0	248.4	189.0	276.3	58.0	376.9									
208493	03/16/92	8.8	238.3	188.0	278.6	60.0	389.0	125.3				1.61	0.437	120.3		
208510	03/16/92	8.4	244.4	111.0	267.3	60.0	357.1	122.9				1.65	0.461			
208518	03/16/92	8.8	239.0	100.0	267.3	64.0	377.1									
208526	03/16/92	8.6	236.7	109.0	246.4	60.0	362.2									
208541	03/16/92	8.0	242.3	105.0	257.9	56.0	358.9									
208548	03/16/92	8.0	245.7	112.0	276.1	61.0	344.3	128.0				1.89	0.456	141.5		
208557	03/16/92	8.1	243.7	186.0	248.9	59.0	356.1									
208558	03/16/92	7.9	238.3	109.0	230.4	57.0	346.2									
208559	03/16/92	8.3	247.1	111.0	260.6	58.0	354.2									
208564	03/16/92	8.1	244.8	110.0	248.6	58.0	362.2	117.7				1.58	0.485	118.3		
208569	03/16/92	8.2	228.4	106.0	254.7	61.0	348.1									
208570	03/17/92	8.3	229.7	186.0	267.3	60.0	372.4	114.8				1.82	0.477	136.1		
208581	03/17/92	7.9	234.2	189.0	271.8	59.0	379.5	116.8	171.5	139.7	0.113					
208582	03/17/92	8.4	236.5	189.0	258.5	63.0	363.7									
208598	03/17/92	8.1	228.8	108.0	266.6	64.0	360.2									
208614	03/17/92	7.9	241.0	110.0	251.3	60.0	340.4									
208617	03/17/92	8.5	229.7	121.0	253.8	67.0	357.2									
208618	03/17/92	8.1	240.1	121.0	274.1	70.0	344.3									
208619	03/17/92	8.1	236.9	116.0	256.1	66.0	345.3									
208643	03/17/92	8.5	240.3	108.0	257.2	58.0	362.6	111.9	144.3	122.1	0.113					
208644	03/17/92	8.2	246.6	106.0	259.4	64.0	357.9									
208658	03/17/92	8.0	234.9	113.0	251.6	62.0	359.6	115.1				2.14	0.632	160.3		
208658	03/17/92	8.1	225.5	105.0	242.1	55.0	335.2									
208661	03/17/92	8.6	233.3	188.0	250.2	56.0	342.8									
208662	03/17/92	8.2	226.4	110.0	274.3	63.0	352.5									
208666	03/17/92	8.4	251.3	108.0	259.4	56.0	367.7									
208671	03/17/92	8.6	242.6	106.0	259.4	60.0	359.6									
208674	03/17/92	8.4	247.1	105.0	254.3	57.0	353.8	126.0								
208689	03/17/92	8.3	246.6	109.0	256.3	57.0	357.0	120.7				1.82	0.420	136.1		
208694	03/18/92	8.2	248.4	109.0	258.8	59.0	388.4	127.7	124.6	114.2	0.113	1.79	0.489	133.6		

ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	GRAB TENSILE/ELONGATION ASTM D4632					PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. YEAR ASTM D4533 MD	THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS				
			M.D. TENSILE ELONG. (lbs)	C.D. TENSILE ELONG. (t)	H. BURST ASTM D3786 (psi)	ASTM D 4491 PERMIT. (sec-1)	WATER PERM.(Rv) (cm/sec)				FLOW (gpm/ft2)	A.O.S. ASTM D4751 (mm)			
208695	03/17/92	8.7	246.2	118.8	270.7	68.0	370.6								
208708	03/17/92	8.6	231.1	105.8	253.4	56.0	367.6	127.9			1.86	0.462	138.7		
208721	03/17/92	8.6	241.2	108.0	260.6	57.0	365.6	131.6			1.61	0.449	120.3		
208731	03/18/92	8.2	232.7	108.0	259.8	57.0	360.9								
208736	03/17/92	8.3	229.1	107.0	267.1	57.0	364.3								
208746	03/17/92	8.7	246.8	107.0	281.3	59.0	375.2								
208752	03/18/92	8.5	231.5	106.0	250.8	59.0	354.1	118.4	133.9	139.2	0.118				
208768	03/18/92	8.9	247.5	108.0	248.6	59.0	382.0	120.6			1.63	0.437	121.8		
208795	03/18/92	9.2	251.8	109.0	282.8	64.0	368.9								
208796	03/18/92	9.5	249.5	106.0	293.8	62.0	381.4								
208797	03/18/92	9.0	264.2	106.0	281.5	62.0	380.3								
208802	03/18/92	8.5	241.7	109.0	254.9	61.0	354.3	115.2			0.111	1.89	0.526	142.0	
208812	03/18/92	8.6	239.9	107.0	268.9	63.0	379.3								
208814	03/19/92	8.8	245.5	108.0	293.4	60.0	377.2								
208817	03/19/92	8.9	248.4	106.0	282.6	62.0	382.0	121.7	170.6	143.4	0.117				
208828	03/19/92	8.4	240.5	106.0	269.3	58.0	385.1								
208843	03/19/92	8.7	241.7	105.0	266.2	59.0	361.5								
208858	03/19/92	8.3	237.2	113.0	270.2	68.0	360.1								
208872	03/19/92	8.2	238.1	107.0	261.0	59.0	339.0	127.6	146.8	143.0	0.113				
208877	03/19/92	8.7	254.3	106.0	263.7	58.0	367.4								
208880	03/19/92	8.6	246.4	102.0	246.2	58.0	368.3								
208890	03/19/92	8.8	263.3	110.0	271.1	57.0	364.4	119.3			1.54	0.482	114.8		0.180
208891	03/19/92	8.6	243.8	106.0	266.6	59.0	368.7								
208892	03/19/92	9.1	250.7	104.0	274.1	61.0	378.0								
208908	03/19/92	8.4	269.8	145.8	284.4	82.0	366.5								
208923	03/19/92	8.4	276.8	152.0	271.6	81.0	361.8								
208924	03/19/92	8.3	281.7	151.3	298.1	84.0	347.0								
208925	03/20/92	8.7	271.1	150.0	255.2	73.0	364.6								
208929	03/20/92	9.2	268.9	139.2	293.0	82.0	393.3	127.6	146.1	129.2	0.121				
208930	03/20/92	8.4	264.4	158.0	294.3	90.0	355.3								
208944	03/20/92	8.3	242.8	146.5	268.7	85.0	352.2								
208959	03/20/92	8.3	237.8	151.0	264.6	86.0	353.1								

GRAB TENSILE/ELONGATION															
ASTM D4632															
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	M.D.		C.D.		M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4633 (lbs)	TEAR. TEAR ASTM D4533		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS ASTM D 4491			
			TENSILE (lbs)	ELONG. (t)	TENSILE (lbs)	ELONG. (t)			NO	CD		PERMIT. (sec-1)	PERM.(Kv) (cm/sec)	FLOW (gpm/ft2)	A.O.S. ASTM D4751 (mm)
208974	03/20/92	8.5	252.9	188.0	262.4	61.0	363.2								
208982	03/20/92	8.4	246.8	116.0	268.0	68.0	361.7								
208984	03/20/92	8.4	252.7	118.0	269.8	67.0	348.4								
208987	03/21/92	8.3	219.4	111.0	256.1	61.0	359.7								
208989	03/20/92	8.2	241.9	113.0	254.0	66.0	342.5		138.0	141.4	0.120				
208994	03/20/92	8.4	240.1	111.0	246.4	59.0	365.5								
2218594	06/27/92	12.3	412.4	114.0	383.4	86.0	437.4								
AVERAGE =		8.6	244.0	109.9	268.1	60.1	362.1	123.0	142.9	128.4	0.113	1.72	0.462	128.7	0.166
STD. DEVIATION =		0.5	17.9	11.5	17.2	7.4	14.4	7.1	16.0	12.9	0.008	0.17	0.054	13.3	0.021

POLYFELT TS1000
CERTIFICATES OF COMPLIANCE

P1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 10
CONTRACT NO. C91028-003-01
GEOTEXTILE CERTIFICATES OF COMPLIANCE - TS 1000
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700



Werkstoff

August 27, 1992

Geo Con
4075 Monroeville Blvd.
Corporate One Bldg. II Ste 400
Monroe, PA 15146

RECEIVED

SEP - 3 1992

GEO-CON, INC.

Polyfelt

SUBJECT: POLYFELT TS1000 Geotextile Certificate of Compliance
RE: Polyfelt Order #6463, Arco Landfill

Dear Mr. Bailey

This letter certifies that POLYFELT TS1000, shipped FOB Evergreen, Alabama, on 8/13/92, includes rolls from Lot # 20022, 20023, 20029, 20032, 20048, 20067, 20110, manufactured by Polyfelt, Inc., which meet or exceed product requirements:

PROPERTY	TEST PROCEDURE	MINIMUM ⁽¹⁾
Weight	ASTM D 3776	15.7 oz/yd ²
Thickness	ASTM D 5199	145* Mil
Grab Strength	ASTM D 4632	340 lbs
Grab Elongation	ASTM D 4632	80 %
Tear Strength	ASTM D 4533	120 lbs
Mullen Burst	ASTM D 3786	500 psi
Puncture Resistance	ASTM D 4833	160 lbs
A.O.S.	ASTM D 4751	.150* mm (100) US Sieve
Permittivity	ASTM D 4491	0.6* sec-1
Water Permeability	ASTM D 4491	0.2* cm/sec
Water Flow Rate	ASTM D 4491	45* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	80(2)*

- (1) Values in weaker principle direction. All minimum values represent minimum average roll values (i.e. test results from any sampled roll in a lot, tested in accordance with ASTM D 4759-88 shall meet or exceed the minimum values listed.)
- * At time of manufacturing; handling may change these property values.
- (2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

Polyfelt, Inc.

P.O. Box 727
200 Miller T Sellers Drive
Evergreen, Alabama 36401
Tel. 205-578-4759
Fax 205-578-4963

SEP 3 02 THU 11:34

GEO CON INC

POLYFELT, INC.



Werkstoff

Polyfelt

August 27, 1992

Geo-Con
4075 Monroeville Blvd.
Corporate One Bldg. II Ste 400
Monroe, PA 15146

SUBJECT: POLYFELT TS1000 Geotextile Certificate of Compliance
RE: Polyfelt Order #6463, Arco Landfill

Dear Mr. Bailey

This letter certifies that POLYFELT TS1000, shipped FOB Evergreen, Alabama, on 8/13/92, includes rolls from Lot # 00138, 10077, 10082, 10088, 10101, manufactured by Polyfelt, Inc., which meet or exceed product requirements:

PROPERTY	TEST PROCEDURE	MINIMUM ⁽¹⁾
Weight	ASTM D 3776	15.7 oz/yd ²
Thickness	ASTM D 5199	145* Mil
Grab Strength	ASTM D 4632	340 lbs
Grab Elongation	ASTM D 4632	80 %
Tear Strength	ASTM D 4533	120 lbs
Mullen Burst	ASTM D 3786	500 psi
Puncture Resistance	ASTM D 4833	160 lbs
A.O.S.	ASTM D 4751	.150* mm (100) US Sieve
Permittivity	ASTM D 4491	0.6* sec-1
Water Permeability	ASTM D 4491	0.2* cm/sec
Water Flow Rate	ASTM D 4491	45* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	80(2)%

(1) Values in weaker principle direction. All minimum values represent minimum average roll values (i.e. test results from any sampled roll in a lot, tested in accordance with ASTM D 4759-88 shall meet or exceed the minimum values listed.)

* At time of manufacturing; handling may change these property values.

(2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,


Applications Engineer

Polyfelt, Inc.

P.O. Box 727
200 Miller I Sellers Drive
Evergreen, Alabama 36401

Tel. 205-578-4756
Fax 205-578-4963

POLYFELT, INC.
PACKING LIST

8/13/92

ORDER NO 6463

LINE NUMBER	ITEM NUMBER	ROLL NUMBER
1	TS10012030011B	0037885
2	TS10012030011B	0130167
3	TS10012030011B	0132476
4	TS10012030011B	0132481
5	TS10012030011B	0132758
6	TS10012030011B	0132771
7	TS10012030011B	0132783
8	TS10012030011B	0132785
9	TS10012030011B	0132802
10	TS10012030011B	0132806
11	TS10012030011B	0132809
12	TS10012030011B	0133801
13	TS10012030011B	0133809
14	TS10012030011B	0133811
15	TS10012030011B	0133812
16	TS10012030011B	0133832
17	TS10012030011B	0133837
18	TS10012030011B	0133839
19	TS10012030011B	0133842
20	TS10012030011B	0133878
21	TS10012030011B	0133947
22	TS10012030011B	0133948
23	TS10012030011B	0134002
24	TS10012030011B	0134005
25	TS10012030011B	0138925
26	TS10012030011B	0208552
27	TS10012030011B	0208850
28	TS10012030011B	0210108
29	TS10012030011B	0210176
30	TS10012030011B	0211800
31	TS10012030011B	0211651
32	TS10012030011B	0212142
33	TS10012030011B	0212227
34	TS10012030011B	0215478
35	TS10012030011B	2217173
36	TS10012030011B	2217184
37	TS10012030011B	2502698
38	TS10012030011B	2502699
39	TS10012030011B	2502700
40	TS10012030011B	2502701
41	TS10012030011B	2502702
42	TS10012030011B	2502703
43	TS10012030011B	2502704
44	TS10012030011B	2502705
45	TS10012030011B	2502707
46	TS10012030011B	2502708

TOTAL ROLLS FOR TS10012030011B

46

TOTAL ROLLS FOR ORDER

48

09/11/92

PRODUCT GRADE: TS 1000

LOT NUMBER: 00138

COLOR: BEIGE

ROLL DIM.: 18 x 300

POLYPET, INC.
QA/QC LABORATORY
EVERGREEN, ALABAMA

TEST ROLLS LOT SUMMARY

Page No. 1

ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION						PUNCTURE RESISTANCE	TRAP. TEAR	HYDRAULIC TESTS					A.O.S.
		ASTM D4632		C.D.		M. BURST	ASTM D4533			ASTM D 4491		ASTM D4751			
		ASTM D3776	TENSILE ELONG.	TENSILE ELONG.	MD		CD			PERMIT.	PERM. (Kv)		FLOW		
		(oz/yd2)	(lbs)	(%)	(lbs)	(%)	(psi)	(lbs)	(lbs)	(in.)	(sec-1)	(cm/sec)	(gpm/ft2)	(in)	
037405	11/18/90	16.7	480.4	103.0	411.3	105.0	523.6								
037523	11/18/90	18.5	511.9	138.0	449.1	154.0	651.6								
037524	11/18/90	17.8	499.5	121.0	461.0	146.0	635.3								
037525	11/18/90	17.2	532.6	123.0	464.9	138.0	596.9								
037538	11/18/90	17.1	596.9	122.0	459.2	115.0	584.2								
037546	11/18/90	16.5	528.5	108.0	378.0	110.0	594.2								
037547	11/18/90	17.2	544.7	116.0	408.4	108.0	556.1								
037552	11/18/90	16.9	581.0	118.0	428.2	113.0	571.1								
037557	11/18/90	17.2	580.5	114.0	407.0	110.0	589.7	196.3	319.7	214.0	0.187	0.83	0.395	61.8	
037569	11/18/90	16.8	563.0	115.0	417.8	112.0	565.0								
037584	11/18/90	17.3	576.0	114.0	464.0	117.0	597.8								
037591	11/19/90	17.4	602.8	130.0	447.8	118.0	604.7								
037601	11/19/90	17.2	568.1	117.0	417.2	114.0	566.0								
037617	11/19/90	17.3	590.6	122.0	464.0	117.0	555.8								
037621	11/19/90	16.7	568.1	117.0	428.9	117.0	546.6								
037622	11/19/90	16.8	563.9	118.0	419.4	120.0	556.1								
037623	11/19/90	16.6	561.8	122.0	427.5	122.0	549.0								
037628	11/19/90	17.0	579.6	124.0	439.9	123.0	537.3								
037637	11/19/90	17.3	608.2	125.0	457.4	122.0	571.0								
037642	11/19/90	17.3	623.9	117.0	457.7	116.0	606.8	188.4	322.4	255.6	0.185				
037656	11/19/90	16.9	585.2	125.0	412.4	134.0	538.6								
037663	11/19/90	17.1	478.1	128.0	330.1	170.0	590.0								
037675	11/20/90	17.6	680.0	127.0	493.4	124.0	581.8								
037677	11/20/90	19.1	689.3	130.0	532.8	125.0	640.6								
037682	11/19/90	17.8	667.8	128.0	528.5	125.0	599.4								
037687	11/19/90	16.7	594.0	121.0	443.3	128.0	566.9								

ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION						PUNCTURE		TRAP. TEMP.		HYDRAULIC TESTS			
		ASTM D4632		ASTM D4632		ASTM D3786		ASTM D4833		ASTM D4513		ASTM D1777		ASTM D 4491 WATER	
		WGT. (oz/yd ²)	M.D. (lbs)	C.D. (lbs)	TENSILE ELONG. (%)	TENSILE ELONG. (%)	N. BURST (psi)	RESISTANCE (lbs)	MO (lbs)	CD (lbs)	THICKNESS (in.)	PERMIT. (sec-1)	PERM. (cm/sec)	FLOW (gpm/ft ²)	A.O.S. (mm)
037695	11/20/90	17.2	623.3	123.0	456.5	120.0	601.9	189.1	291.2	257.0	0.183				
037696	11/20/90	17.3	624.2	122.0	434.9	116.0	592.0								
037708	11/20/90	16.7	568.4	116.0	431.6	114.0	545.2								
037721	11/20/90	16.9	583.4	120.0	412.2	114.0	592.5								
037723	11/20/90	17.1	587.3	128.0	444.4	119.0	558.6								
037734	11/20/90	17.1	591.1	120.0	439.2	116.0	572.0								
037742	11/20/90	17.5	621.0	121.0	456.5	116.0	603.6								
037761	11/20/90	16.9	604.6	118.0	454.5	118.0	588.1								
037799	11/20/90	16.8	589.5	121.0	443.7	120.0	578.9								
037804	11/21/90	16.6	600.5	121.0	475.0	121.0	586.7	200.0	329.6	234.9	0.180				
037805	11/21/90	16.8	580.7	118.0	446.4	118.0	605.0								
AVERAGE =		17.2	581.4	120.8	441.7	121.3	581.1	193.5	315.7	240.4	0.184	0.83	0.395	61.8	0.196
STD. DEVIATION =		0.5	46.0	6.3	36.1	12.7	28.7	5.6	16.9	20.3	0.003	0.00	0.000	0.00	0.000

ROLL DIM.: 10 x 300

POLYFELT, INC.
QA/QC LABORATORY
EVERGREEN, ALABAMA

TEST ROLLS LOT SUMMARY

Page No. 1

ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION						PUNCTURE RESISTANCE	TRAP. YEAR	HYDRAULIC TESTS				
		WEIGHT ASTM D3776 (oz/yd2)	ASTM D4632		C.D. (%)	M. BURST ASTM D3786 (psi)	THICKNESS ASTM D1777 (in.)			ASTM D 4491 WATER			A.O.S. ASTM D4751 (mm)	
			TENSILE (lbs)	ELONG. (%)						TENSILE (lbs)	ELONG. (%)	PERMIT. (sec-1)		PERM.(Kv) (cm/sec)
130101	09/08/91	16.2	512.3	121.0	399.6	131.0	539.7							
130102	09/08/91	16.5	517.7	119.0	391.3	126.0	516.9							
130103	09/08/91	16.3	547.9	121.0	421.7	127.0	545.0							
130107	09/08/91	16.4	537.8	115.0	432.7	125.0	515.8	181.6	281.3	202.1	0.174			
130108	09/08/91	16.2	515.9	120.0	401.4	125.0	548.6							
130113	09/08/91	16.4	546.3	124.0	416.0	126.0	555.0							
130126	09/08/91	16.3	537.5	117.0	412.7	121.0	542.7							
130132	09/08/91	16.0	547.7	120.0	429.5	126.0	530.6							
130134	09/08/91	16.1	539.6	117.0	428.9	123.0	520.6							
130142	09/08/91	16.4	541.4	124.0	418.3	121.0	536.0							
130143	09/09/91	16.4	548.6	119.0	414.5	123.0	523.1							
130144	09/09/91	16.3	539.1	124.0	423.9	122.0	547.5							
130151	09/09/91	15.8	500.9	131.0	381.5	123.0	509.2							
130153	09/09/91	15.9	472.5	122.0	353.9	125.0	533.0							
130155	09/09/91	16.2	513.9	122.0	398.3	123.0	517.0							
130157	09/10/91	16.0	512.6	111.0	379.8	122.0	532.0							
130169	09/10/91	16.1	497.0	112.0	400.3	128.0	558.1	174.5	274.1	222.2	0.185			
130174	09/09/91	15.8	512.6	131.0	264.2	127.0	533.0							
130180	09/09/91	16.3	504.7	123.0	408.6	133.0	535.8							
130191	09/09/91	15.9	505.6	119.0	392.4	128.0	533.3							
130197	09/10/91	15.8	516.2	115.0	384.5	122.0	522.8	189.9	261.7	213.5	0.194			
130212	09/10/91	18.3	582.5	119.0	473.9	117.0	569.0							
130214	09/10/91	17.3	543.6	114.0	441.0	113.0	537.5							
130215	09/10/91	17.5	543.2	115.0	448.4	119.0	553.6							
130216	09/10/91	17.5	552.6	114.0	448.4	111.0	556.6							
130217	09/10/91	16.8	561.8	117.0	452.3	117.0	540.0							

ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	GRAB TENSILE/ELONGATION ASTM D4632				M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. TEAR ASTM D4533		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS ASTM D 4491 WATER				A.O.S. ASTM D4751 (mm)
			N.D.		C.D.				MD	CD		ASTM D 4491 WATER				
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)						PERMIT. (sec-1)	PERM.(Kv) (cm/sec)	FLOW (gpm/ft2)		
130218	09/10/91	16.7	511.7	112.0	427.5	110.0	526.3									
130219	09/10/91	16.2	549.5	115.0	433.1	118.0	515.3									
130225	09/10/91	16.3	527.9	112.0	421.4	112.0	524.0									
130227	09/11/91	15.9	545.4	107.0	460.6	115.0	539.2	173.3	252.5	215.7	0.156					
130231	09/10/91	16.2	542.3	115.0	427.3	113.0	528.0									
130235	09/10/91	16.5	518.0	110.0	427.5	106.0	533.3									
130240	09/10/91	15.9	525.2	112.0	423.7	114.0	528.3									
130246	09/10/91	15.9	509.0	111.0	422.8	117.0	501.0									
130256	09/10/91	16.5	524.5	122.0	431.6	113.0	539.1									
130263	09/10/91	16.3	538.4	110.0	429.8	105.0	524.0									
130270	09/10/91	15.9	533.0	110.0	436.7	106.0	545.5									
130281	09/10/91	16.6	548.6	109.0	451.1	108.0	544.2	187.1	282.2	217.4	0.166	0.98	0.416	73.4	0.091	
130282	09/11/91	16.0	541.1	110.0	453.6	110.0	547.5									
130287	09/11/91	16.1	547.0	111.0	456.3	111.0	553.9									
130300	09/11/91	16.0	530.6	114.0	446.0	115.0	553.0									
130301	09/11/91	15.9	544.7	113.0	428.9	109.0	525.8									
130313	09/11/91	16.3	488.3	115.0	503.1	114.0	550.0									
130322	09/11/91	15.8	511.9	113.0	419.6	110.0	520.8									
130332	09/11/91	16.2	491.2	119.0	398.3	116.0	523.6									
130333	09/11/91	16.3	507.8	118.0	421.2	114.0	528.0									
130334	09/11/91	15.8	519.5	117.0	428.9	114.0	513.1									
130339	09/11/91	16.5	559.8	114.0	461.0	110.0	578.3									
130343	09/12/91	16.8	536.0	108.0	479.7	106.0	573.3	182.4	262.1	224.6	0.169					
130344	09/11/91	16.1	555.5	115.0	464.0	110.0	567.6									
130359	09/11/91	15.9	557.8	116.0	457.2	109.0	553.9									
130374	09/11/91	16.3	559.6	114.0	456.8	110.0	572.8									
130378	09/12/91	16.4	553.1	111.0	467.1	108.0	564.4	196.4	282.4	230.2	0.179					
130393	09/12/91	16.7	567.7	118.0	443.9	113.0	560.3									
130395	09/12/91	16.5	575.1	116.0	466.4	119.0	541.9									
130400	09/12/91	16.5	599.6	122.0	490.5	119.0	555.6									
130401	09/12/91	16.5	557.8	118.0	468.9	118.0	545.0									
130402	09/12/91	16.6	572.4	118.0	474.8	115.0	571.4									

ROLL NO.	TEST_DATE	GRAB TENSILE/ELONGATION ASTM D4632						PUNCTURE		TRAP. TEAR		HYDRAULIC TESTS				A.O.S. ASTM D4751
		WEIGHT ASTM D3776 (oz/yd2)	M.D.		C.D.		M. BURST ASTM D3786 (psi)	RESISTANCE ASTM D4833 (lbs)	ASTM D4533 MD (lbs)	THICKNESS ASTM D1777 (in.)	ASTM D 4491 WATER					
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)					PERMIT. (sec-1)	PERM.(Kv) (cm/sec)	FLOW (gpm/ft2)			
130407	09/12/91	16.3	578.0	116.0	458.8	112.0	567.2									
130412	09/12/91	16.2	577.6	117.0	464.2	112.0	559.2									
130423	09/12/91	16.3	583.7	107.0	464.9	109.0	586.9									
130427	09/12/91	16.2	517.5	108.0	445.5	110.0	563.3									
130428	09/12/91	16.5	538.0	107.0	453.4	108.0	570.0									
130429	09/12/91	16.6	563.0	107.0	443.9	110.0	554.2									
AVERAGE =		16.3	536.8	115.8	431.8	116.5	542.1	183.6	270.9	217.9	0.175	0.98	0.416	73.4	0.091	
STD. DEVIATION =		0.4	25.8	5.4	35.8	7.1	18.9	8.3	12.1	9.0	0.013	*,**	*,***	***,*	***,***	

09/09/92

PRODUCT GRADE: TS 1000

LOT NUMBER: 10082

COLOR: BEIGE

ROLL DIM.: 10 x 300

POLYFELT, INC.
QA/QC LABORATORY
EVERGREEN, ALABAMA

TEST ROLLS LOT SUMMARY

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GRAB TENSILE/ELONGATION															
ASTM D4632															
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	M.D.		C.D.		M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. TEAR ASTM D4533 MD CD (lbs)		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS			A.O.S. ASTM D4751 (mm)
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)			PERMIT. (sec-1)	PERM.(Kv) (cm/sec)		WATER FLOW (gpm/ft2)			
132471	09/30/91	16.0	483.5	112.0	388.1	112.0	539.7								
132472	09/30/91	16.3	497.3	111.0	385.7	113.0	531.4								
132473	09/30/91	15.9	511.4	114.0	407.0	112.0	523.6								
132476	09/30/91	16.1	487.6	115.0	409.7	119.0	534.1								
132477	09/30/91	16.0	507.4	116.0	421.4	121.0	536.2								
132478	09/30/91	15.9	520.0	120.0	406.4	111.0	535.0								
132484	09/30/91	16.2	539.1	118.0	425.3	116.0	542.0								
132490	09/30/91	16.5	534.4	121.0	405.7	110.0	547.9								
132495	09/30/91	16.1	479.3	104.0	420.3	114.0	535.6	182.2	292.1	256.3	0.185				
132496	09/30/91	16.2	549.9	112.0	419.9	114.0	529.8								
132499	09/30/91	16.0	522.0	113.0	414.2	117.0	550.6								
132511	09/30/91	16.2	528.1	119.0	432.2	122.0	529.2								
132519	09/30/91	15.8	513.9	109.0	415.6	124.0	539.9								
132530	09/30/91	16.0	489.2	109.0	425.7	123.0	538.7								
132551	10/01/91	16.7	444.2	103.0	416.7	120.0	550.0	189.6	285.8	241.7	0.197				
132552	10/01/91	16.2	470.9	104.0	399.8	123.0	559.1								
132563	10/09/91	16.4	517.1	107.0	448.7	120.0	569.3								
132568	10/01/91	16.2	519.5	117.0	385.0	113.0	553.7								
132569	10/01/91	16.0	520.0	112.0	400.1	119.0	565.7								
132570	10/01/91	16.0	493.2	111.0	384.5	119.0	560.1								
132575	10/01/91	16.3	530.6	115.0	424.4	116.0	561.7								
132580	10/01/91	16.3	550.1	110.0	422.3	116.0	557.2								
132592	10/01/91	16.0	546.5	114.0	413.6	118.0	555.4								
132606	10/01/91	16.6	556.4	107.0	424.6	108.0	565.2	186.4	297.5	193.8	0.175				
132607	10/01/91	16.8	540.9	112.0	425.3	114.0	540.8								
132614	10/01/91	17.2	566.3	111.0	435.8	113.0	574.8								

GRAB TENSILE/ELONGATION															
ASTM D4632															
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	M.D.		C.D.		H. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. TEAR ASTM D4533		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS			
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)			MD (lbs)	CD (lbs)		ASTM D 4491			
												PERMIT. (sec-1)	PERM.(Kv) (cm/sec)	WATER FLOW (gpm/ft2)	I.O.S. ASTM D4751 (mm)
132624	10/01/91	16.3	561.6	117.0	445.3	113.0	538.4								
132632	10/01/91	16.5	573.8	115.0	436.1	109.0	557.9								
132647	10/01/91	16.3	572.0	118.0	444.4	115.0	529.7								
132661	10/02/91	17.6	562.7	108.0	438.1	111.0	599.7	198.9	295.7	235.4	0.181				
132662	10/02/91	16.5	559.6	113.0	441.7	114.0	563.1								
132674	10/02/91	16.8	555.3	114.0	406.1	112.0	557.1								
132682	10/03/91	16.8	542.7	112.0	416.0	112.0	564.4								
132696	10/02/91	17.2	542.5	111.0	443.3	119.0	569.8								
132714	10/02/91	16.2	548.6	108.0	417.8	110.0	541.7	163.6	260.8	234.7	0.168				
132723	10/02/91	16.4	547.0	111.0	423.0	115.0	570.7								
132731	10/02/91	16.5	529.7	118.0	389.9	117.0	557.8								
132744	10/02/91	16.4	538.2	115.0	418.3	122.0	553.7								
132757	10/02/91	16.2	531.0	112.0	415.4	116.0	552.3								
132769	10/03/91	16.2	538.4	109.0	443.3	115.0	541.1	195.7	285.1	228.5	0.184				
132770	10/03/91	16.6	543.2	110.0	421.0	114.0	560.0								
132783	10/03/91	16.4	511.4	110.0	395.6	114.0	549.5								
132795	10/03/91	16.4	534.4	109.0	407.7	111.0	538.5								
132809	10/03/91	16.2	503.3	108.0	381.8	108.0	553.7								
132823	10/04/91	16.5	545.0	109.0	423.9	112.0	560.8	191.6	243.7	221.4	0.174				
132836	10/03/91	16.3	543.6	119.0	441.2	129.0	553.5								
132841	10/03/91	16.1	532.4	118.0	415.8	124.0	535.8								
132848	10/03/91	16.5	543.6	120.0	419.9	115.0	555.8								
132850	10/03/91	16.7	556.4	113.0	416.5	114.0	562.4								
132863	10/03/91	15.9	548.8	113.0	417.2	116.0	587.8								
132873	10/03/91	16.1	556.0	116.0	422.3	118.0	552.2								
132878	10/04/91	16.6	561.4	110.0	437.9	113.0	564.1	183.6	243.2	213.2	0.175				
AVERAGE =		16.4	530.8	112.5	418.0	115.7	551.9	186.4	275.5	227.1	0.180	*	**	*	***
STD. DEVIATION =		0.4	27.8	4.3	17.1	4.5	15.3	10.9	22.8	19.1	0.009	*	**	*	***

09/09/92

POLYFELT, INC.
QA/QC LABORATORY
EVERGREEN, ALABAMA

PRODUCT GRADE: TS 1000

LOT NUMBER: 10088

COLOR: BEIGE

ROLL DIM.: 16 x 300

TEST ROLLS LOT SUMMARY

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ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	GRAB TENSILE/ELONGATION ASTM D4632					PUNCTURE RESISTANCE ASTM D4833 (lbs)	TEAR. TEAR ASTM D4533		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS ASTM D 4491 WATER			A.O.S. ASTM D4751 (mm)
			M.D.		C.D.		M. BURST ASTM D3786 (psi)		MD	CD		PERMIT. (sec-1)	PERM.(Kv) (cm/sec)	FLOW (gpm/ft2)	
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)									
133798	10/11/91	17.0	559.1	128.0	419.9	117.0	557.6								
133807	10/11/91	17.2	553.3	127.0	452.0	123.0	563.3								
133809	10/11/91	17.4	578.0	136.0	477.9	129.0	569.0								
133814	10/11/91	17.1	583.0	126.0	461.7	116.0	561.0								
133831	10/11/91	16.8	492.1	115.0	412.0	112.0	551.6								
133834	10/11/91	16.6	531.9	116.0	432.0	108.0	562.0								
133835	10/11/91	16.7	513.5	118.0	438.5	117.0	529.7								
133840	10/12/91	16.5	519.8	117.0	414.7	112.0	535.0	175.6	266.6	195.9	0.166			0.106	
133860	10/11/91	16.4	522.7	118.0	419.2	113.0	544.1								
133865	10/11/91	15.7	542.7	121.0	405.7	112.0	531.8								
133875	10/11/91	16.3	523.1	119.0	415.6	114.0	554.9								
133887	10/12/91	15.9	528.0	120.0	418.1	113.0	529.3	178.2	245.3	212.4	0.168				
133900	10/12/91	16.8	532.1	123.0	449.8	116.0	561.6								
133915	10/12/91	16.5	500.9	118.0	419.4	114.0	559.6								
133927	10/12/91	16.2	513.5	127.0	435.2	124.0	541.6								
133928	10/12/91	17.0	537.8	127.0	440.1	119.0	552.8								
133929	10/12/91	16.8	517.1	128.0	428.0	119.0	558.7								
133934	10/12/91	16.2	492.3	120.0	395.3	114.0	556.7								
133941	10/13/91	16.8	500.2	119.0	420.5	116.0	546.8	185.8	268.7	218.1	0.175				
133953	10/12/91	16.1	487.8	115.0	401.0	114.0	542.9								
133968	10/12/91	16.4	511.2	118.0	421.9	115.0	546.5								
133985	10/12/91	16.3	507.8	115.0	414.7	107.0	542.7								
134012	10/13/91	16.5	518.9	120.0	413.6	119.0	533.4								
134035	10/13/91	16.7	524.3	126.0	422.1	114.0	533.0								
134047	10/13/91	17.1	494.1	120.0	397.1	114.0	565.5								
134056	10/14/91	16.7	536.6	110.0	417.8	102.0	534.0	190.8			0.177				

NO.	TEST DATE	GRAB TENSILE/ELONGATION						PUNCTURE RESISTANCE	TRAP. TEAR		HYDRAULIC TESTS				A.O.S.
		ASTM D4632				M. BURST ASTM D3786	ASTM D4533		THICKNESS ASTM D1777	ASTM D 4491 WATER			ASTM D4751		
		WEIGHT ASTM D3776	TENSILE		ELONG.					PERMIT.	PERM.(Kv)	FLOW			
			(oz/yd2)	(lbs)	(%)									(lbs)	
134070	10/13/91	16.3	507.8	113.0	412.4	113.0	510.8								
134083	10/13/91	16.1	485.6	109.0	410.0	109.0	557.0								
134097	10/13/91	16.4	482.2	108.0	398.9	114.0	542.0								
134113	10/14/91	17.1	520.2	111.0	435.2	117.0	546.2	178.3	250.7	216.5	0.176				
134114	10/14/91	16.4	511.4	112.0	402.8	115.0	562.6								
134127	10/14/91	16.7	475.0	114.0	411.1	121.0	546.1								
134147	10/14/91	16.5	510.5	119.0	414.7	117.0	534.2								
AVERAGE =		16.6	518.4	119.2	422.1	115.1	547.1	181.8	257.8	210.7	0.172	***	***	***	0.106
STD. DEVIATION =		0.4	25.4	6.4	18.7	5.0	13.1	6.3	11.6	10.1	0.005	***	***	***	***

ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION						PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. TEAR		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS			I.O.S. ASTM D4751 (mm)
		WEIGHT ASTM D3776 (oz/yd2)	ASTM D4632		H. BURST ASTM D3786 (psi)	ASTM D4533 MD (lbs)	ASTM D4533 CD (lbs)		ASTM D 4491 WATER						
			M.D. (lbs)	C.D. (lbs)					PERMIT. (sec-1)	PERM.(Kv) (cm/sec)		FLOW (gpm/ft2)			
													TENSILE (lbs)	ELONG. (%)	
137117	11/05/91	16.2	510.5	116.0	424.8	124.0	549.0	186.0	257.4	192.8	0.184				
137132	11/05/91	16.5	517.7	126.0	444.2	133.0	565.6								
137147	11/05/91	16.1	535.5	139.0	458.1	141.0	566.9								
137161	11/05/91	16.4	527.4	128.0	443.5	131.0	558.0								
137174	11/06/91	16.5	555.5	123.0	440.6	121.0	585.4	181.3	244.4	202.9	0.183				
137175	11/06/91	16.6	518.9	121.0	468.8	131.0	587.8								
137188	11/06/91	16.3	535.1	125.0	409.5	120.0	570.5								
137203	11/06/91	16.2	494.1	116.0	415.1	124.0	550.3								
137217	11/06/91	16.3	505.5	119.0	410.2	124.0	560.5								
137228	11/06/91	16.6	514.8	121.0	449.1	128.0	576.5								
137232	11/06/91	16.5	522.5	128.0	419.0	126.0	548.0	188.7	249.8	204.6	0.184				
137233	11/06/91	16.5	492.1	117.0	428.2	128.0	573.7								
137260	11/06/91	16.4	515.9	124.0	431.1	124.0	563.5								
137275	11/06/91	16.4	526.1	122.0	417.4	119.0	552.2								
137290	11/07/91	16.4	518.6	122.0	425.7	121.0	557.6								
137305	11/07/91	16.4	480.8	120.0	400.3	121.0	555.8								
137318	11/07/91	16.5	528.8	138.0	440.3	128.0	556.2								
137332	11/07/91	16.2	501.1	126.0	421.0	125.0	555.8								
137347	11/07/91	16.7	517.7	121.0	453.2	122.0	541.9	187.6	277.4	232.2	0.183				
137348	11/07/91	16.4	464.0	123.0	401.6	129.0	556.1								
137349	11/07/91	16.9	480.4	119.0	410.0	125.0	543.9								
137350	11/07/91	16.4	489.6	125.0	410.4	125.0	568.0								
137355	11/07/91	16.5	509.9	127.0	406.1	123.0	563.9								
137360	11/07/91	16.3	506.5	125.0	405.5	122.0	568.6								
137399	11/07/91	16.4	506.5	125.0	416.0	125.0	560.1								
137403	11/08/91	16.5	533.3	127.0	408.8	121.0	566.3								
137416	11/08/91	16.5	515.7	124.0	432.0	134.0	562.0								
137423	11/08/91	16.5	538.2	132.0	453.2	121.0	548.9								
137432	11/08/91	16.5	527.9	128.0	446.9	131.0	561.0								
137445	11/08/91	16.4	548.8	138.0	441.2	123.0	566.4								
137460	11/08/91	16.5	540.2	124.0	468.5	127.0	523.5	188.5	308.3	223.7	0.191				
137461	11/08/91	16.4	531.7	130.0	444.6	127.0	555.9								

GRAB TENSILE/ELONGATION															
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	ASTM D4632				M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. TEAR		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS			
			M.D.		C.D.				ASTM D4533 MD	CD		ASTM D 4491 WATER			
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)						PERMIT. (sec-1)	PERM.(kv) (cm/sec)	FLOW (gpm/ft2)	A.O.S. ASTM D4751 (mm)
137476	11/08/91	16.2	514.6	129.0	419.6	133.0	563.3								
137491	11/08/91	16.4	514.8	134.0	430.2	131.0	570.1								
137505	11/08/91	16.8	557.8	127.0	433.6	131.0	558.6								
137518	11/09/91	16.1	505.6	122.0	404.8	122.0	551.9								
137532	11/09/91	16.2	494.8	127.0	422.8	125.0	544.1								
137546	11/09/91	16.4	549.9	128.0	452.0	128.0	548.7								
137561	11/09/91	16.2	525.6	126.0	426.6	119.0	538.2								
137575	11/10/91	16.8	530.1	124.0	428.6	120.0	574.1	181.5	263.3	199.3	0.177				
137586	11/09/91	16.4	537.1	127.0	424.8	120.0	557.5								
137604	11/09/91	16.4	524.5	138.0	421.2	131.0	554.1								
137620	11/09/91	16.5	513.0	135.0	416.5	136.0	525.7								
137633	11/10/91	16.7	534.8	128.0	434.0	120.0	528.1	204.5			0.187				
137646	11/10/91	16.5	500.2	123.0	421.0	124.0	541.4								
137662	11/10/91	16.3	560.3	130.0	476.3	127.0	540.4								
AVERAGE =		16.4	521.8	125.3	429.2	126.0	558.6	186.1	257.4	199.6	0.182	1.04	0.477	77.5	0.103
STD. DEVIATION =		0.2	25.8	5.6	21.3	4.7	14.3	7.8	23.9	20.1	0.005	*,**	*,***	***,†	***,***

ROLL DIM.: 10 x 300

TEST BOLLS LOT SUMMARY

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[illegible]

ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION						PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. TEAR		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS			A.O.S. ASTM D4751 (mm)
		WEIGHT ASTM D3776 (oz/yd2)	ASTM D4632		H. BURST ASTM D3786 (psi)	ASTM D4533			ASTM D 4491 WATER						
			TENSILE (lbs)	ELONG. (%)		TENSILE (lbs)	ELONG. (%)		MD	CD		PERMIT. (sec-1)	PERM.(Kv) (cm/sec)	FLOW (gpm/ft2)	
209401	03/24/92	16.2	594.2	107.0	436.1	104.0	587.1								
209412	03/24/92	16.3	596.4	101.0	437.6	102.0	580.2								
209419	03/25/92	16.0	543.8	102.0	437.4	109.0	542.3								
209424	03/24/92	17.3	581.2	104.0	445.7	109.0	577.9								
209429	03/25/92	16.5	563.9	99.0	442.8	104.0	545.7	188.1	269.1	193.0	0.163	0.87	0.338	64.3	0.103
209430	03/25/92	16.6	563.6	99.0	455.9	104.0	563.9								
209434	03/25/92	16.6	537.8	100.0	426.6	110.0	556.0								
209435	03/25/92	17.1	497.3	112.0	509.4	114.0	550.4								
209436	03/25/92	17.4	602.1	104.0	489.2	112.0	585.7								
209437	03/25/92	17.0	612.0	107.0	513.9	114.0	573.7								
209442	03/25/92	17.6	604.6	107.0	477.5	110.0	607.0								
209447	03/25/92	16.6	584.6	112.0	473.6	111.0	592.8								
209462	03/26/92	16.8	577.8	104.0	478.5	110.0	597.9								
209464	03/25/92	17.7	536.0	111.0	437.4	108.0	572.1								
209468	03/25/92	16.5	576.7	110.0	500.4	99.0	563.6								
209469	03/25/92	16.7	576.2	110.0	476.8	112.0	582.9	198.3	222.0	201.3	0.171				
209482	03/26/92	16.9	564.3	108.0	469.6	107.0	559.5								
209484	03/25/92	16.3	570.8	110.0	476.3	111.0	562.5								
209492	03/25/92	16.5	594.5	106.0	476.6	92.0	590.7								
209493	03/25/92	16.6	583.2	106.0	526.1	97.0	550.9								
209494	03/25/92	17.3	576.2	109.0	469.1	103.0	558.2								
209499	03/25/92	17.4	591.5	108.0	496.4	104.0	589.0								
209503	03/25/92	17.0	601.9	108.0	512.6	103.0	576.0								
209516	03/26/92	17.2	570.8	105.0	491.4	100.0	599.0	192.2	266.0	200.1	0.157				
209517	03/26/92	16.8	573.3	106.0	486.2	98.0	557.5								
209520	03/26/92	16.5	540.0	106.0	458.8	99.0	538.7								
209521	03/26/92	16.2	570.6	108.0	477.5	108.0	564.4								
209522	03/26/92	16.1	559.1	105.0	474.8	100.0	562.1								
209527	03/26/92	17.3	570.4	106.0	472.7	98.0	561.0								
209532	03/26/92	16.6	551.0	105.0	451.6	98.0	548.5								
209539	03/26/92	16.5	516.8	113.0	418.1	103.0	537.7								
209541	03/26/92	16.3	492.1	107.0	408.2	100.0	536.6								

ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION ASTM D4632						PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. TEST ASTM D4533 MD CD (lbs)	THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS			A.O.S. ASTM D4751 (mm)
		WEIGHT ASTM D3776 (oz/yd2)	M.D.		C.D.		M. BURST ASTM D3786 (psi)				ASTM D 4491 WATER			
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)					PERMIT. (sec-1)	PERM.(Kv) (cm/sec)	FLOW (gpm/ft2)	
209565	03/26/92	17.4	521.3	107.0	453.4	105.0	526.2							
209566	03/26/92	17.6	545.2	112.0	456.5	103.0	571.9							
209567	03/26/92	18.9	583.2	110.0	481.7	103.0	583.2							
209568	03/26/92	19.1	567.2	108.0	477.2	101.0	586.6	206.6	249.1	196.1	0.170			
209569	03/26/92	18.6	584.1	107.0	498.4	106.0	587.2							
209570	03/26/92	18.4	592.9	110.0	493.7	105.0	561.4							
209571	03/26/92	18.1	473.6	103.0	531.9	106.0	584.6							
209579	03/26/92	16.9	554.4	112.0	468.7	107.0	539.0							
209582	03/26/92	17.5	553.1	104.0	456.1	101.0	552.8							
209590	03/26/92	17.6	544.7	99.0	469.6	105.0	571.3							
209601	03/26/92	17.2	576.0	105.0	476.6	102.0	573.9							
209608	03/27/92	17.2	569.9	114.0	453.4	116.0	546.6	195.5	258.8	210.6	0.173			
209609	03/27/92	16.6	554.4	115.0	441.2	128.0	537.9							
209610	03/27/92	15.2	525.8	113.0	433.8	118.0	511.9							
209615	03/27/92	17.4	536.2	118.0	461.3	130.0	569.4							
209625	03/27/92	16.9	492.3	112.0	426.4	122.0	558.7							
209638	03/27/92	16.7	522.2	102.0	435.6	114.0	629.8							
209643	03/27/92	16.5	552.8	105.0	436.3	111.0	619.7							
209648	03/27/92	15.9	534.4	106.0	399.8	105.0	607.0							
209662	03/27/92	16.4	536.0	102.0	420.5	104.0	619.4							
209663	03/28/92	16.3	549.5	102.0	430.7	103.0	614.6	208.7	225.0	200.6	0.183			
209667	03/27/92	16.2	610.0	109.0	476.6	106.0	609.2							
209668	03/27/92	17.0	538.7	104.0	403.9	105.0	600.4							
209669	03/27/92	16.7	574.9	106.0	443.7	102.0	626.8							
209674	03/27/92	16.1	549.7	100.0	430.2	102.0	602.9							
209685	03/28/92	16.1	557.3	102.0	431.8	100.0	600.5							
209687	03/27/92	15.8	579.6	103.0	417.4	97.0	572.3							
209700	03/27/92	16.0	552.4	104.0	426.2	103.0	558.9							
209706	03/28/92	16.4	577.4	104.0	438.9	106.0	617.1	197.5	229.1	164.9				
209720	03/28/92	15.8	550.8	101.0	398.7	101.0	575.6							
209726	03/28/92	16.2	565.0	108.0	421.7	108.0	581.6							
209737	03/28/92	16.1	560.7	108.0	409.5	109.0	573.8							

GRAB TENSILE/ELONGATION															
ASTM D4632															
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	H.D.		C.D.		H. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TRAP. TEAR ASTM D4533 MD CD (lbs)		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS ASTM D 4491 WATER PERMIT. PERM.(Kv) FLOW (sec-1) (cm/sec) (gpm/ft2)			A.O.S. ASTM D4751 (mm)
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)			MD	CD		PERMIT. (sec-1)	PERM.(Kv) (cm/sec)	FLOW (gpm/ft2)	
209738	03/28/92	16.1	544.3	107.0	421.4	109.0	567.3								
209739	03/28/92	16.4	550.6	102.0	396.9	104.0	606.2								
209742	03/28/92	16.5	557.6	105.0	408.2	110.0	596.2								
209747	03/28/92	16.4	522.7	101.0	401.0	105.0	585.2								
209757	03/28/92	16.0	565.0	103.0	404.8	101.0	595.8								
209761	03/28/92	16.2	539.8	102.0	425.5	105.0	575.8								
209763	03/30/92	16.0	572.6	102.0	414.5	101.0	581.9								
209777	03/28/92	15.8	546.5	101.0	413.6	104.0	571.1								
209791	03/28/92	16.0	521.0	100.0	390.2	106.0	577.9								
209805	03/28/92	16.0	562.7	103.0	407.9	106.0	584.8								
209820	03/30/92	16.0	569.7	103.0	408.4	105.0	561.6								
AVERAGE =		16.7	559.4	106.2	449.5	106.1	571.6	193.5	246.1	195.8	0.168	0.87	0.338	64.3	0.103
STD. DEVIATION =		0.7	25.4	5.5	30.8	6.4	24.0	9.8	16.7	12.3	0.008	1.11	0.111	1.11	0.111

09/01/92

PRODUCT GRADE: TS 1000
 LOT NUMBER: 20023
 COLOR: BEIGE
 ROLL DIM.: 10 x 300

POLYFELT, INC.
 QA/QC LABORATORY
 EVERGREEN, ALABAMA

TEST ROLLS LOT SUMMARY

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ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION						PUNCTURE TRAP. TEAR			HYDRAULIC TESTS			
		WEIGHT ASTM D3776 (oz/yd2)	ASTM D4632		M. BURST		RESISTANCE ASTM D4833 (lbs)	ASTM D4533		THICKNESS ASTM D1777 (in.)	ASTM D 4491		WATER FLOW (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			M.D. TENSILE (lbs)	C.D. ELONG. (%)	M. BURST TENSILE (lbs)	ELONG. (%)		MD (lbs)	CD (lbs)		PERMIT. (sec-1)	PERM. (Kv) (cm/sec)		
209826	04/05/92	17.4	416.7	91.0	262.6	103.0	517.3							
209828	04/05/92	16.0	440.8	99.0	358.2	104.0	527.4			0.163				
209830	04/05/92	17.1	505.8	104.0	406.1	109.0	551.9							
209833	04/05/92	16.3	481.1	104.0	382.3	93.0	519.0							
209846	04/06/92	16.9	501.3	99.0	412.9	99.0	526.8	187.7	164.7	149.4	0.155	0.67	0.277	50.7
209851	04/06/92	17.3	500.0	125.0	435.8	122.0	544.7			0.170				0.116
209853	04/06/92	17.4	518.0	129.0	461.0	130.0	542.8							
209856	04/06/92	17.6	492.1	128.0	419.4	121.0	552.5			0.176				
209862	04/06/92	16.9	498.4	108.0	446.0	106.0	570.5			0.175				
209872	04/06/92	17.3	524.9	111.0	435.2	103.0	562.8							
209888	04/06/92	16.7	526.3	128.0	446.9	127.0	536.0			0.171				
209891	04/06/92	16.3	490.3	127.0	436.5	126.0	542.5			0.171				
209898	04/06/92	17.0	531.5	132.0	434.9	123.0	536.5							
209903	04/06/92	16.7	492.1	128.0	429.5	135.0	551.5			0.178				
209914	06/04/92	16.9	495.2	131.0	412.0	130.0	547.4			0.181				
209932	04/06/92	16.6	482.4	136.0	393.8	136.0	525.7			0.179				
209945	04/07/92	16.8	481.3	110.0	391.7	106.0	554.0	178.8	199.9	169.1	0.178			
209956	04/07/92	16.9	465.5	109.0	396.2	109.0	536.0			0.176				
209964	04/07/92	16.5	481.1	112.0	390.8	108.0	537.5			0.178				
209965	04/07/92	16.7	529.7	115.0	455.9	112.0	548.3			0.178				
209966	04/07/92	17.0	567.9	130.0	453.4	117.0	554.7			0.183				
209971	04/07/92	16.7	502.2	120.0	432.5	119.0	553.4			0.177				
209981	04/07/92	16.9	509.2	119.0	442.4	119.0	545.0			0.178				
209994	04/08/92	16.3	508.5	113.0	418.1	106.0	555.1	184.2	228.8	203.0	0.177			
209995	04/07/92	16.2	504.9	126.0	434.3	115.0	523.5			0.176				
210003	04/07/92	16.3	484.2	120.0	418.7	116.0	560.3			0.179				

ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION						PUNCTURE		TRAP. TEAR		THICKNESS	HYDRAULIC TESTS			
		WEIGHT ASTM D3776 (oz/yd2)	ASTM D4632		M. BURST ASTM D3786 (psi)	RESISTANCE ASTM D4833 (lbs)	MD (lbs)	CD (lbs)	ASTM D 4491		WATER FLOW (gpm/ft2)		A.O.S. ASTM D4751 (mm)			
			M.D. TENSILE (lbs)	C.D. ELONG. (%)					PERMIT. (sec-1)	PERM.(Kv) (cm/sec)						
210017	04/07/92	16.0	487.4	129.0	412.4	114.0	561.5					0.171				
210025	04/08/92	16.6	461.0	113.0	422.3	110.0	543.1									
210029	04/07/92	16.4	473.0	114.0	422.1	109.0	549.0					0.177				
210045	04/07/92	16.7	477.9	113.0	425.5	116.0	562.6					0.183				
210052	04/08/92	17.3	515.9	120.0	435.4	113.0	576.3					0.177	0.98	0.452	73.5	0.111
210067	04/08/92	16.7	515.0	118.0	450.9	114.0	556.9					0.172				
210081	04/08/92	16.0	501.1	115.0	424.1	110.0	556.6					0.175				
210109	04/08/92	16.1	505.1	118.0	415.4	106.0	542.3					0.179				
210110	04/08/92	15.9	474.1	115.0	410.6	108.0	552.9					0.178				
210115	04/08/92	16.0	518.4	116.0	430.2	106.0	558.3					0.180				
210120	04/08/92	16.3	513.2	119.0	431.8	107.0	560.6									
210132	04/08/92	15.8	540.7	122.0	433.6	106.0	558.0					0.178				
210146	04/08/92	16.0	491.4	111.0	443.3	107.0	556.7					0.179				
210160	04/08/92	16.0	503.8	114.0	444.2	112.0	562.3					0.178				
210166	04/09/92	16.0	513.5	117.0	437.2	107.0	549.9	193.7	239.9	199.4		0.174				
210167	04/09/92	15.9	487.8	116.0	411.8	104.0	535.9					0.172				
AVERAGE =		16.6	497.9	117.2	420.4	112.9	547.8	186.1	208.3	180.2		0.176	0.83	0.365	62.1	0.114
STD. DEVIATION =		0.5	26.3	9.8	32.7	9.6	13.7	6.3	33.6	25.5		0.005	0.22	0.124	16.1	0.004

ROLL DIM.: 18 x 300

POLYFELT, INC.
QA/QC LABORATORY
EVERGREEN, ALABAMA

TEST ROLLS LOT SUMMARY

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ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION ASTM D4632						PUNCTURE RESISTANCE		TEAP. YEAR		THICKNESS		HYDRAULIC TESTS		
		WEIGHT ASTM D3776 (oz/yd ²)	M.D.		C.D.		M. BURST ASTM D3786 (psi)	ASTM D4833 (lbs)	NO	CD	ASTM D1777 (lbs)	ASTM D1777 (in.)	ASTM D 4491 PERMIT. (sec-1)	ASTM D 4491 WATER FLOW (cm/sec) (gpm/ft ²)		A.O.S. ASTM D4751 (mm)
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)										
211745	04/22/92	17.3	549.7	119.0	434.9	123.0	564.1									
211750	04/22/92	17.0	531.9	120.0	429.8	120.0	534.4									
211775	04/22/92	16.6	522.2	120.0	445.7	131.0	527.2									
211787	04/22/92	17.2	512.6	121.0	425.0	122.0	543.1									
211799	04/22/92	17.0	526.1	119.0	421.2	119.0	537.8	194.2	267.3	211.8	0.200					
211801	04/22/92	16.4	518.9	122.0	415.8	118.0	545.7									
211813	04/22/92	17.1	499.3	116.0	412.9	122.0	557.3									
211824	04/22/92	16.7	536.0	118.0	433.1	121.0	546.8									
211827	04/22/92	17.1	530.6	119.0	451.1	125.0	538.2	196.0	275.6	225.9	0.201					
211828	04/22/92	16.3	478.1	111.0	408.2	122.0	523.1									
211844	04/23/92	16.9	513.7	115.0	443.9	122.0	533.2									
211847	04/23/92	17.0	429.1	104.0	422.1	134.0	522.8									
AVERAGE =		17.2	533.1	123.7	428.7	129.3	545.0	189.7	284.7	234.1	0.192	0.92	0.427	68.6	0.144	
STD. DEVIATION =		0.7	35.6	8.2	24.1	7.7	16.2	10.5	19.7	19.2	0.010	*,**	*,***	***, *	***, ***	

PRODUCT GRADE: TS 1000
LOT NUMBER: 20032
COLOR: BEIGE
BOX DIM.: 18 x 300

TEST ROLLS LOT SUMMARY

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[illegible]

ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION						PUNCTURE RESISTANCE	TRAP. TEAR		HYDRAULIC TESTS							
		ASTM D4632		ASTM D3776		M. BURST	ASTM D4533		THICKNESS	ASTM D 4491 WATER				A.O.S.				
		WEIGHT	M.D.	C.D.	ASTM D4533					ASTM D4633	MD	CD	ASTM D1777		PERMIT. PERM.(Kv)		FLOW	ASTM D4751
															(oz/wd2)	(lbs)		
212243	04/27/92	16.3	538.0	120.0	429.3	110.0	553.4											
212248	04/27/92	16.8	546.3	120.0	446.9	110.0	550.6				0.195							
212251	04/27/92	16.5	515.9	118.0	427.1	113.0	540.4				0.197							
212252	04/27/92	16.5	503.3	117.0	417.2	111.0	528.8											
212253	04/27/92	16.1	511.9	117.0	265.5	111.0	524.9				0.192							
212298	04/26/92	16.9	486.7	111.0	430.4	116.0	556.0				0.199							
AVERAGE =		16.7	533.2	119.6	442.4	115.8	543.6	191.5	271.1	240.5	0.190	1.04	0.493	77.7	0.116			
STD. DEVIATION =		0.4	38.8	5.2	40.7	4.9	16.4	5.6	12.9	12.8	0.007	*,**	*,***	***,*	***,***			

09/09/92

PRODUCT GRADE: TS 1000

LOT NUMBER: 20048

COLOR: BEIGE

ROLL DIM.: 10 x 300

POLYFELT, INC.
QA/QC LABORATORY
EVERGREEN, ALABAMA

TEST ROLLS LOT SUMMARY

Page No. 1

ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION ASTM D6632						PUNCTURE		TEAR		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS ASTM D 4491 WATER			A.O.S. ASTM D4751 (mm)
		WEIGHT ASTM D3776 (oz/yd2)	H.D. TENSILE ELONG. (lbs) (t)		C.D. TENSILE ELONG. (lbs) (t)		M. BURST ASTM D3786 (psi)	RESISTANCE ASTM D4833 (lbs)	TRAP. TEAR ASTM D4533 MD	CD	ASTM D1777 (in.)		PENETRY. (sec-1)	PERM.(Kv) (cm/sec)	FLOW (gpm/ft2)	
215396	05/24/92	18.2	487.4	108.0	413.6	96.0	542.9									
215413	05/24/92	18.0	673.4	108.0	496.8	100.0	562.9									
215415	05/25/92	19.3	671.4	111.0	540.9	111.0	629.5	200.7	257.4	185.2	0.162					
215418	05/24/92	17.9	602.8	114.0	486.7	104.0	545.3									
215419	05/24/92	18.4	632.9	128.0	491.6	116.0	547.1									
215420	05/24/92	17.6	633.8	110.0	518.0	109.0	572.8	188.6	269.3	187.4	0.167	0.76	0.316	57.0	0.125	
215425	05/26/92	16.6	591.3	113.0	457.4	102.0	543.5									
215435	05/24/92	16.4	575.3	114.0	470.5	116.0	528.8									
215453	05/24/92	16.1	610.2	136.0	437.2	122.0	506.5									
215465	05/25/92	16.2	541.6	114.0	412.4	125.0	519.2	179.5	257.9	188.0	0.166					
215475	05/25/92	16.9	578.9	119.0	404.3	128.0	556.2									
215487	05/25/92	16.2	503.2	117.0	402.5	127.0	532.4									
AVERAGE =		17.3	598.5	116.7	461.0	113.0	548.9	189.6	261.5	186.9	0.165	0.76	0.316	57.0	0.125	
STD. DEVIATION =		1.1	52.5	8.1	47.1	11.1	31.3	10.6	6.8	1.5	0.003	***	***	***	***	***

ROLL DIM: 13 x 300

POLYFELT, INC.
QA/QC LABORATORY
EVERETT, ALABAMA

TEST BELLS LOT SUMMARY

Page No. 1

GRAB TENSILE/KLOMATION															
ASTM D4632															
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	N.D.		C.D.		M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TEMP. YEAR		THICKNESS ASTM D1777 (in.)	HYDRAULIC TESTS			A.O.S. ASTM D4751 (mm)
			ASTM D4533 MD	ASTM D4533 CD	ASTM D4533 MD	ASTM D4533 CD			ASTM D4533 MD	ASTM D4533 CD		ASTM D4533 MD	ASTM D4533 CD		
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)						PERMEITY (sec-1)	PUGH. (cm/sec)	FLOW (gpm/ft2)	
2217145	06/13/92	16.8	521.1	119.0	394.0	130.0	510.6								
2217147	06/13/92	16.8	506.7	113.0	390.6	119.0	548.4								
2217208	06/13/92	17.1	526.5	113.0	412.2	125.0	564.4								
2217227	06/13/92	16.7	510.5	115.0	408.6	126.0	533.7								
2217239	06/14/92	16.5	482.0	109.0	398.7	129.0	523.8								
2217240	06/14/92	16.4	481.1	110.0	403.7	128.0	539.7	182.5	228.6	173.1	0.188	1.11	0.565	83.4	0.106
2217250	06/14/92	16.8	486.0	115.0	373.1	132.0	515.6								
2217264	06/14/92	16.5	482.6	103.0	389.5	124.0	567.3								
2217278	06/14/92	16.4	466.4	107.0	380.5	123.0	549.9								
2217305	06/14/92	16.9	464.2	106.0	372.6	102.0	526.2								
2217306	06/14/92	17.3	507.4	92.0	390.3	90.0	556.9								
2217309	06/14/92	17.8	534.8	111.0	410.9	105.0	571.4								
2217310	06/14/92	17.7	509.4	108.0	405.7	101.0	566.8								
2217311	06/14/92	16.5	545.9	113.0	435.2	103.0	568.1								
AVERAGE =		16.9	501.8	109.6	398.1	116.9	543.8	182.5	228.6	173.1	0.188	1.11	0.565	83.4	0.106
STD. DEVIATION =		0.5	25.3	6.6	16.8	13.7	19.1	*** *	*** *	*** *	** ***	* **	* ***	*** *	*** ***

09/09/92

PRODUCT GRADE: TS 1000

LOT NUMBER: 20116

COLOR: BKICE

ROLL DIM.: 10 x 300

POLYFELT, INC.
QA/QC LABORATORY
EVERGREEN, ALABAMA

TEST ROLLS LOT SUMMARY

Page No. 1

ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	GRAB TENSILE/ELONGATION ASTM D4632				M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TEMP. TEST		THICKNESS ASTM D1771 (in.)	HYDRAULIC TESTS ASTM D 4491 WATER			A.O.S. ASTM D4751 (mm)
			M.D.		C.D.				ASTM D4533 MD (lbs)	ASTM D4533 CD (lbs)		PERMIT. (sec-1)	PEAK.(Kv) (cm/sec)	FLOW (gpm/ft2)	
			TENSILE (lbs)	ELONG. (%)	TENSILE (lbs)	ELONG. (%)									
2502325	08/08/92	19.0	594.2	136.0	520.2	133.0	658.9								
2502326	08/08/92	18.8	595.6	136.0	510.5	110.0	662.3								
2502327	08/08/92	20.9	661.1	136.0	557.3	116.0	732.6								
2502332	08/08/92	21.8	526.7	141.0	563.9	157.0	624.7								
2502368	08/08/92	17.2	531.2	142.0	490.5	134.0	583.1								
2502379	08/08/92	17.2	542.3	140.0	486.9	132.0	624.1								
2502415	08/09/92	17.4	505.0	127.0	474.5	111.0	613.3								
2502437	08/09/92	16.8	581.0	135.0	484.2	124.0	581.8								
2502450	08/09/92	16.5	559.6	115.0	481.5	105.0	600.8								
2502468	08/09/92	16.5	543.6	112.0	479.9	104.0	593.8								
2502486	08/09/92	16.4	564.8	122.0	452.7	104.0	588.4								
2502503	08/10/92	16.4	545.9	120.0	456.0	109.0	575.4	198.9	254.3	195.8	0.201				
2502554	08/10/92	16.4	529.2	112.0	484.3	104.0	582.3				0.202				
2502564	08/10/92	16.4	511.9	129.0	427.5	120.0	570.6	195.7	210.6	180.0	0.186	0.71	0.321	53.2	
2502581	08/10/92	16.6	452.5	154.0	40.8	148.0	542.1				0.207			0.091	
2502582	08/10/92	17.1	486.2	136.0	468.0	148.0	531.1				0.212				
2502583	08/10/92	16.6	459.5	128.0	450.0	155.0	543.4				0.210				
2502587	08/10/92	16.9	528.3	130.0	421.0	117.0	587.6								
2502597	08/10/92	16.5	486.2	128.0	440.3	134.0	598.1				0.209				
2502605	08/11/92	16.8	574.0	117.0	474.3	113.0	603.3	200.0	244.4	205.2	0.192				
2502614	08/11/92	16.3	523.8	111.0	481.5	104.0	612.0				0.185				
2502626	07/10/92	16.7	542.9	107.0	455.9	93.0	582.7				0.170				
2502627	08/10/92	17.1	532.6	105.0	456.1	94.0	618.9				0.185				
2502628	08/11/92	17.0	631.8	119.0	545.4	103.0	612.5				0.188				
2502633	08/11/92	16.4	631.4	118.0	524.7	100.0	584.0				0.184				
2502643	08/11/92	17.3	597.8	118.0	471.6	104.0	616.7				0.209				

ROLL NO.	TEST DATE	GRAB TENSILE/ELONGATION						PUNCTURE RESISTANCE	TEAR. TEST		THICKNESS	HYDRAULIC TESTS								
		ASTM D4632				H. HUNT	ASTM D3786		MD	CD		ASTM D 4491		FLOW	I.O.S.					
		ASTM D3776	TENSILE ELONG.				ASTM D4833					PERMIT.	PERM.(Kv)		ASTM D4751					
		(oz/yd2)	(lbs)	(%)	(lbs)	(%)	(psi)	(lbs)	(lbs)	(in.)	(sec-1)	(cm/sec)	(gpm/ft2)	(mm)						
2502664	07/12/92	16.3	598.6	118.0	507.2	114.8	568.1													
2502682	08/12/92	17.7	558.8	114.0	484.2	114.0	568.0													
2502700	08/12/92	16.1	578.0	120.0	477.0	112.0	578.9													
AVERAGE =		17.2	553.3	125.3	465.4	117.8	597.9	198.2	236.4	193.7	0.196	0.71	0.321	53.2	0.091					
STD. DEVIATION =		1.3	49.1	12.5	88.6	17.8	39.7	2.2	22.9	12.7	0.013	0.02	0.002	0.002	0.002					

P1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 28
CONTRACT NO. C91028-003-01
GEOTEXTILE CERTIFICATES OF COMPLIANCE - TS1000
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

39
RBN

**Werkstoff****Polyfelt**

12/21/92

GEO-CON INC.
4075 MONROEVILLE BOULEVARD
CORPORATE ONE BLDG.II, STE 400
MONROEVILLE PA15146

SUBJECT: POLYFELT TS100 Geotextile Certificate of Compliance
RE:Polyfelt Job # 433 Our Order # 7760 Customer ref # 23052

Dear Sir/Madam,

This letter certifies that POLYFELT TS100 was shipped FOB
Evergreen, Alabama, on 12/11/92 ,manufactured by Polyfelt, Inc.,
which meet or exceed the project requirements listed below and were shipped
from Lot(s): 20199

PROPERTY	TEST PROCEDURE	VALUE(1)
WEIGHT	ASTM D 3776	15.7 Oz per sq yd
THICKNESS	ASTM D 5199	145.0 *Mil
GR STRENGTH	ASTM D 4632	340.0 lbs
GRAB ELONGATION	ASTM D 4632	80.0 %
TEAR STRENGTH	ASTM D 4533	120.0 lbs
MULLEN BURST	ASTM D 3786	500.0 psi
PUNCTURE RESISTANCE	ASTM D 4833	160.0 lbs
A.O.S.	ASTM D 4751	100 *U.S. Std Sieve
A.O.S.	ASTM D 4751	.150*mm
PERMITTIVITY	ASTM D 4491	.60 *1/sec
WATER PERMEABILITY	ASTM D 4491	.2 *cm/sec
WATER FLOW RATE	ASTM D 4491	45.0 *gpm/sq ft
U.V. RESISTANCE	ASTM D 4355	80.0 (2) %

(1) Values in weaker principle direction. Unless noted otherwise these values represent minimum average roll values (i.e. test results from any sampled roll in a lot, tested in accordance with ASTM D4759-88 shall meet or exceed the minimum values listed)

* Determined at the time of manufacturing, storage and handling conditions which differ from those found in ASTM D4759-88 may influence these properties.

(2) UV resistance testing is based on results from independent conformance testing conducted at South Florida Test Service.

(3) Strongest Principle Direction.



Werkstoff

Polyfelt

PAGE 2 OF 2

Unless noted otherwise this certification is based on testing conducted by Polyfelt's Quality Assurance & Quality control testing laboratories at the time of manufacturing. Polyfelt, Inc issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

POLYFELT, INC.
PACKING LIST

12/11/92

Page 1

ORDER NO 7760

LINE NUMBER	ITEM NUMBER	ROLL NUMBER
1	TS10012030011B	2510804
2	TS10012030011B	2510821
3	TS10012030011B	2510822
4	TS10012030011B	2510824
5	TS10012030011B	2510829
6	TS10012030011B	2510832

TOTAL ROLLS FOR TS10012030011B 6

TOTAL ROLLS FOR ORDER 6

12/17/92

PRODUCT GRADE: TS 1088

LOT NUMBER: 20199

COLOR: BK/GR

ROLL DIR.: 10 x 380

POLYFELT, INC.
QA/QC LABORATORY
EVERGREEN, ALABAMA

TEST ROLLS LOT SUMMARY

Page No. 1

ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	GRAB TENSILE/ELONGATION ASTM D4632				M. BURST ASTM D3786 (psi)	PUNCTURE RESISTANCE ASTM D4833 (lbs)	TEAR		THICKNESS ASTM D1377 (in.)	HYDRAULIC TESTS ASTM D 4491 WATER			A.O.S. ASTM D4751 (mm)
			M.D. TENSILE ELONG. (%)	C.D. TENSILE ELONG. (%)	M.D. CD	CD			PENETRY (sec-1)	PENIL (Rv) (cm/sec)		FLOW (gpm/ft2)			
2510627	11/21/91	16.6	503.3	97.0	440.6	92.0	713.9								
2510628	11/21/92	16.4	531.5	99.0	459.7	90.0	726.7								
2510629	11/21/92	17.0	522.9	97.0	472.1	94.0	746.1								
2510634	11/21/92	16.0	497.9	99.0	444.6	94.0	686.6	280.7	161.6	193.3	0.170			0.875	
2510638	11/21/92	16.0	481.5	98.0	414.0	92.0	677.8								
2510654	11/21/92	16.8	523.1	102.0	453.2	89.0	745.3								
2510661	11/21/92	16.3	521.1	106.0	463.1	91.0	729.9								
2510662	11/21/92	16.2	529.9	108.0	462.4	89.0	760.6								
2510663	11/21/92	16.6	537.5	111.0	493.2	93.0	762.6								
2510668	11/21/92	16.1	525.2	105.0	482.4	94.0	733.4	283.1	281.3	193.9	0.182				
2510678	11/21/92	16.4	524.9	113.0	487.8	96.0	711.0								
2510699	11/21/92	16.2	513.9	116.0	441.7	99.0	689.3	185.8	218.2	184.8	0.180				
2510713	11/21/92	16.5	511.7	121.0	482.6	113.0	669.1					0.99	0.420	73.1	
2510718	11/22/92	15.8	469.1	105.0	432.9	100.0	660.7								
2510727	11/22/92	16.1	440.1	120.0	376.2	109.0	563.1								
2510728	11/22/92	16.2	432.7	132.0	406.1	118.0	591.0								
2510733	11/22/92	16.4	446.0	142.0	392.9	125.0	549.7								
2510741	11/22/92	16.3	459.7	137.0	401.4	110.0	570.1								
2510742	11/22/92	15.7	452.7	126.0	407.7	106.0	594.2								
2510743	11/22/92	15.9	480.4	112.0	385.7	276.0	582.1								
2510748	11/22/92	16.4	492.8	129.0	462.6	110.0	638.5								
2510758	11/22/92	15.2	488.5	116.0	473.4	105.0	642.3								
2510776	11/22/92	16.4	485.8	135.0	419.0	102.0	642.8								
2510790	11/23/92	16.3	478.6	125.0	421.0	111.0	577.7								
2510799	11/23/92	16.1	491.9	139.0	483.2	114.0	564.9								
2510800	11/23/92	15.9	486.2	141.0	432.0	120.0	576.8								

GRAB TENSILE/ELONGATION														PUNCTURE				TEAR		HYDRAULIC TESTS				A.O.S.	
ROLL NO.	TEST DATE	WEIGHT ASTM D3776 (oz/yd2)	H.D.		C.D.		H. BURST ASTM D3786 (psi)	RESISTANCE ASTM D4833 (lbs)	ASTM D4533		THICKNESS ASTM D1777 (in.)	ASTM D 4491 WATER			FLOW (gpm/ft2)	A.S.T.M. D4751 (mm)									
			TENSILE	ELONG.	TENSILE	ELONG.			MD	CD		PERMIT.	PERM. (K)	FLOW											
			(lbs)	(%)	(lbs)	(%)			(lbs)	(lbs)		(sec-1)	(cm/sec)	(mm)											
2510801	11/23/92	16.4	486.7	130.0	420.8	113.0	541.1																		
2510806	11/23/92	16.2	491.2	135.0	391.7	107.0	588.4																		
2510816	11/23/92	16.1	469.8	113.0	401.9	99.0	569.7																		
2510834	11/23/92	16.1	459.0	106.0	402.8	99.0	581.2	162.4	212.0	154.6	0.192														
2510839	11/23/92	15.9	438.8	114.0	376.0	102.0	528.5																		
2510840	11/23/92	16.0	422.8	108.0	371.3	99.0	516.5																		
2510845	11/23/92	15.9	469.6	124.0	385.9	118.0	522.1																		
2510860	11/23/92	15.8	419.6	134.0	376.2	115.0	521.7																		
2510878	11/23/92	17.5	453.4	139.0	423.9	121.0	553.6	162.1	179.0	157.4	0.209														
2510896	11/23/92	15.8	449.6	143.0	402.5	114.0	534.5																		
2510914	11/23/92	16.4	432.9	138.0	368.1	109.0	558.5																		
2510932	11/23/92	16.3	439.4	140.0	398.7	124.0	558.7																		
2510946	11/24/92	15.9	390.4	95.0	347.0	85.0	531.4																		
2510947	11/24/92	16.1	380.0	98.0	371.7	90.0	527.3																		
2510948	11/24/92	16.2	407.0	104.0	372.2	91.0	529.6																		
2510953	11/24/92	16.0	389.5	100.0	354.8	92.0	564.0																		
2510971	11/24/92	16.3	428.0	108.0	397.1	99.0	538.0	158.6	182.5	151.2	0.193														
2510973	11/24/92	16.6	399.6	112.0	356.9	98.0	554.4																		
2510974	11/24/92	17.6	390.6	117.0	364.5	102.0	535.8																		
2510975	11/24/92	16.7	414.9	106.0	373.3	97.0	525.7																		
2510980	11/24/92	17.4	423.0	112.0	373.5	107.0	551.2																		
2510982	11/24/92	17.6	416.0	109.0	375.1	100.0	555.6																		
2510984	11/24/92	17.5	459.5	115.0	390.4	99.0	575.0																		
2510985	11/24/92	17.2	426.2	110.0	382.7	103.0	561.2																		
2510990	11/24/92	17.4	443.5	107.0	379.6	102.0	573.4	184.3	187.2	161.2	0.213														
2511000	11/24/92	17.0	449.3	111.0	407.7	106.0	572.5																		
2511005	11/24/92	16.5	445.5	112.0	406.4	101.0	553.1	151.4	181.0	166.1	0.178														
AVERAGE =		16.4	462.7	116.5	411.0	106.0	602.4	176.1	189.3	170.3	0.190	8.99	0.428	73.1	0.075										
STD. DEVIATION =		0.5	42.5	14.3	38.9	25.7	75.2	20.0	17.3	17.6	0.015	2.22	2.222	222.2	222.2										

**GEOTEXTILE THREAD
CERTIFICATES OF COMPLIANCE**

P1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 7
CONTRACT NO. C91028-003-01
GEOTEXTILE THREAD CERTIFICATE OF COMPLIANCE
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

MTI 215 364 7287

TEL NO.

Sep 04, 92 11:57 P.01

MIDDLEBURG THREADS, INC.

INDUSTRIAL SEWING THREADS

1030 MILLCREEK DRIVE
FEASTERVILLE, PA 19053

PHONE (215) 364-6333
FAX (215) 364-7287

FAX TRANSMISSION

TO: GEO-CON
ATTN: CHAS BRADLEY
RE: THREAD SPECS
DATE: 9/4/92

DEM CHAS,

PER YOUR REQUEST I AM PLEASED TO
PROVIDE THE FOLLOWING DATA:

BN/207 Polyester Thread

COLOR: WHITE

FIBER: 100% CONTINUOUS FILAMENT BRIGHT

HIGH TENACITY POLYESTER (DUPONT)

TENSILE: 33.3 LBS

YARD: 2000 YDS/LB

BONDED + PRE LUBRICATED

ANY FURTHER QUESTION, JUST ASK.

Best Regards,

GEOSYNTHETIC CLAY LINER

- **CERTIFICATES OF COMPLIANCE**
- **WARRANTY LETTER CONCERNING
GAS VENT STONE**

CERTIFICATES OF COMPLIANCE

P1-0129

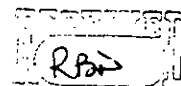
SUBMITTAL 28QC04
ADDENDUM NO. 4
CONTRACT NO. C91027-003-01
LOW PERMEABILITY GEOSYNTHETIC LINER
CERTIFICATES OF COMPLIANCE
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

WIG 1 / 1992



Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700



TECHNOLOGY CO.

3150 1ST AVENUE • P.O. BOX 1009 • SPEARFISH, SOUTH DAKOTA 57783
605-642-8531 • FAX 605-642-8539

August 6, '92

To: GEO CON INC.,
2448 South Brooklyn Ave.
Wellsville, NY 14895

From: PG Technology Co.
3150 1st Avenue
Spearfish, SD 57783

Attached are your Quality Control/Assurance documents
for your recent order of Gundseal.

These documents cover roll numbers: 2160, 2166, 2167,
2550-2576, 2578-2583, 2596, 2627-2630, 2632-2690, 2709, 2713-2715,
2718-2739, 2742-2780, 2782-2793, 2819-2832, 2834-2835, 2837-2844,
2847, 2849-2850, 2852-2876

Item 1) Pages 2-14 are the Bentonite Certificates from
the Bentonite Supplier.

Item 2) Pages 15-27 are the Bentonite Quality Control
Verification sheets done by PG Technology Co.

Item 3) Pages 28-31 is the listing of Gundseal roll
numbers and HDPE supplier roll numbers.

Item 4) Pages 32-78 HDPE Quality Control Certificates.

Item 5) Pages 79-91 Gundseal Quality information.

Item 6) Pages 92-104 Bentonite Quality Control
Verification Daily Production.

Thank you for choosing Gundseal for your project.
Quality is important to us at PG Technology Co. If
you have questions regarding this order please call.

Ray Brosnahan

Date: 10 Aug 92

Production Manager
PG Technology Co.

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHORE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 20-May-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
21-May-92 in UTI #86 as requested on your order no.

A sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	7.2
Water Absorption	600 Min.	944
Free Swell	10 - 30	18
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	23.9
% Retained On 50 Mesh	70 - 90	75.6
% Retained On 200 Mesh	0 - 5	0.4
% Retained On Pan	0 - 1.0	0.1

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

In any correspondence regarding this shipment, please refer to
our Order Number .79874 .

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHORE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 15-Jun-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57763

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
10-Jun-92 in UTI #86 as requested on your order no.

A sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	7.4
Water Absorption	600 Min.	932
Free Swell	10 - 30	20
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	24.6
% Retained On 50 Mesh	70 - 90	74.3
% Retained On 200 Mesh	0 - 5	0.8
% Retained On Pan	0 - 1.0	0.3

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

In any correspondence regarding this shipment, please refer to
our Order Number 70243.

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHORE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 15-Jun-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
11-Jun-92 in UTI #86 as requested on your order no.

A sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	7.2
Water Absorption	600 Min.	944
Free Swell	10 - 30	12
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	22.5
% Retained On 50 Mesh	70 - 90	76.8
% Retained On 200 Mesh	0 - 5	0.5
% Retained On Pan	0 - 1.0	0.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

In any correspondence regarding this shipment, please refer to
our Order Number 70244 .

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHORE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 20-Jul-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on 13-Jul-92 in UTI #1318 as requested on your order no.

A sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	7.4
Water Absorption	600 Min.	912
Free Swell	10 - 30	20
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	23.6
% Retained On 50 Mesh	70 - 90	75.2
% Retained On 200 Mesh	0 - 5	1
% Retained On Pan	0 - 1.0	0.2

We hereby certify that the results shown above represent this shipment. Tests were conducted using American Colloid Company and/or customer approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

Any correspondence regarding this shipment, please refer to our Order Number 70907.

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHURE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 20-Jul-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
13-Jul-92 in UTI #1318 as requested on your order no.

A sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	6.8
Water Absorption	600 Min.	942
Free Swell	10 - 30	20
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	21.9
% Retained On 50 Mesh	70 - 90	77
% Retained On 200 Mesh	0 - 5	0.6
% Retained On Pan	0 - 1.0	0.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

Any correspondence regarding this shipment, please refer to
our Order Number 70908.

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHURE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 20-Jul-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
14-Jul-92 in UTI #1318 as requested on your order no.

A sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	7.8
Water Absorption	600 Min.	936
Free Swell	10 - 30	19
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	22.7
% Retained On 50 Mesh	70 - 90	75.8
% Retained On 200 Mesh	0 - 5	1.2
% Retained On Pan	0 - 1.0	0.3

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

any correspondence regarding this shipment, please refer to
our Order Number 70911 .

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHORE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 20-Jul-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
14-Jul-92 in UTI #1318 as requested on your order no.

sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	7.2
Water Absorption	600 Min.	956
Free Swell	10 - 30	18
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	24.3
% Retained On 50 Mesh	70 - 90	74.4
% Retained On 200 Mesh	0 - 5	1
% Retained On Pan	0 - 1.0	0.3

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

In any correspondence regarding this shipment, please refer to
our Order Number 70912 .

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHORE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 20-Jul-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
15-Jul-92 in UTI #1318 as requested on your order no.

A sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	8.2
Water Absorption	600 Min.	867
Free Swell	10 - 30	20
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	25.2
% Retained On 50 Mesh	70 - 90	74
% Retained On 200 Mesh	0 - 5	0.6
% Retained On Pan	0 - 1.0	0.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

Any correspondence regarding this shipment, please refer to
our Order Number 70960.

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHURE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 20-Jul-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
15-Jul-92 in UTI #1318 as requested on your order no.

sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	7.6
Water Absorption	600 Min.	904
Free Swell	10 - 30	20
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	21.6
% Retained On 50 Mesh	70 - 90	77.5
% Retained On 200 Mesh	0 - 5	0.7
% Retained On Pan	0 - 1.0	0.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

Any correspondence regarding this shipment, please refer to
our Order Number 70961.

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHORE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 31-Jul-92

TO: F.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
23-Jul-92 in UTI #38 as requested on your order no.

A sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	7.2
Water Absorption	600 Min.	920
Free Swell	10 - 30	20
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	20.4
% Retained On 50 Mesh	70 - 90	78.6
% Retained On 200 Mesh	0 - 5	0.6
% Retained On Pan	0 - 1.0	0.4

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

any correspondence regarding this shipment, please refer to
our Order Number 71054 .

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHURE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 31-Jul-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
23-Jul-92 in UTI #38 as requested on your order no.

Sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	7.8
Water Absorption	600 Min.	946
Free Swell	10 - 30	22
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	21.6
% Retained On 50 Mesh	70 - 90	77.2
% Retained On 200 Mesh	0 - 5	1
% Retained On Pan	0 - 1.0	0.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

For any correspondence regarding this shipment, please refer to
our Order Number 71055.

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHORE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 31-Jul-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
24-Jul-92 in UTI #38 as requested on your order no.

ample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	7.4
Water Absorption	600 Min.	883
Free Swell	10 - 30	20
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	24.3
% Retained On 50 Mesh	70 - 90	74.8
% Retained On 200 Mesh	0 - 5	0.7
% Retained On Pan	0 - 1.0	0.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

any correspondence regarding this shipment, please refer to
our Order Number 71056 .

CERTIFICATE OF COMPLIANCE

AMERICAN COLLOID COMPANY
ONE NORTH ARLINGTON 1500 W. SHORE DRIVE
ARLINGTON HEIGHTS, ILLINOIS 60004

Date 31-Jul-92

TO: P.G. TECHNOLOGY CO.
3150 1st AVENUE
EXIT 14 OFF I90
SPEARFISH, S.D. 57783

ATTN: RAY Brosnahan

Dear Sirs:

A shipment of 3050 left our Colony West, Wyoming plant on
24-Jul-92 in UTI #38 as requested on your order no.

A sample from this shipment was tested, and gave the following results:

Test	Req. Specification	Actual Results
Moisture	6 - 12%	8.4
Water Absorption	600 Min.	918
Free Swell	10 - 30	22
% Retained On 16 Mesh	0 - 1.0	0
% Retained On 20 Mesh	15 - 30	23.8
% Retained On 50 Mesh	70 - 90	75.3
% Retained On 200 Mesh	0 - 5	0.6
% Retained On Pan	0 - 1.0	0.3

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Colloid Company and/or customer
approved laboratory procedures.

Tests Conducted By: ALLAN COLLINS

Approved By: Rick Budmayr

AMERICAN COLLOID COMPANY

any correspondence regarding this shipment, please refer to
our Order Number 71057 .



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 5-21-92

Bentonite Supplier: American Colloid

Truck No.: 79874

Moisture 7.4%

Filtrate Loss 17.6 ML

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	<u>18.82</u>
40	<u>74.48</u>
80	<u>5.20</u>
100	<u>.24</u>
+200	<u>.70</u>
-200	<u>.64</u>

Plate Water Absorption: -

Wash 325 Sieve: -

Charles Taylor
Technician

Ray Birmingham
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 6-1-92

Bentonite Supplier: American Colloid

Truck No.: 70122

Moisture 6.8%

Filtrate Loss 20.8 ML

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	<u>28.27</u>
40	<u>68.39</u>
80	<u>3.05</u>
100	<u>.08</u>
+200	<u>.08</u>
-200	<u>.17</u>

Plate Water Absorption: 722.5

Wash 325 Sieve: 3.7

Charles Taylor
Technician

Ray Brannan
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 6-1-92

Bentonite Supplier: American Colloid

Truck No.: 70122

Moisture 6.8%

Filtrate Loss 20.8 ML

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	<u>28.27</u>
40	<u>68.39</u>
80	<u>3.05</u>
100	<u>.08</u>
+ 200	<u>.08</u>
- 200	<u>.17</u>

Plate Water Absorption: 722.5

Wash 325 Sieve: 3.7

Charles Taylor
Technician

Ray Buchanan
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 6-11-92

Bentonite Supplier: American Colloid

Truck No.: 70244

Moisture 7.6%

Filtrate Loss 19.2 ML "as is" moisture

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	<u>18.38</u>
40	<u>71.59</u>
80	<u>7.86</u>
100	<u>.38</u>
+200	<u>.93</u>
-200	<u>.91</u>

Plate Water Absorption: 702

Wash 325 Sieve: 3.5%

Charles F. Taylor
Technician

Ray B. Anderson
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 6-11-92

Bentonite Supplier: American Colloid

Truck No.: 70244

Moisture 7.6%

Filtrate Loss 19.2 ML "as received"

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	<u>18.38</u>
40	<u>71.59</u>
80	<u>7.86</u>
100	<u>.38</u>
+ 200	<u>.93</u>
-200	<u>.91</u>

Plate Water Absorption: 702

Wash 325 Sieve: 3.5%

Charles Taylor
Technician

Ray Braenzel
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 6-11-92

Bentonite Supplier: American Colloid

Truck No.: 70244

Moisture 7.6%

Filtrate Loss 19.2 ML "as received"

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	<u>18.38</u>
40	<u>71.59</u>
80	<u>7.86</u>
100	<u>.38</u>
+ 200	<u>.93</u>
-200	<u>.91</u>

Plate Water Absorption: 702

Wash 325 Sieve: 3.5%

Charles Taylor
Technician

Roy Brown
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 6-11-92

Bentonite Supplier: American Colloid

Truck No.: 70244

Moisture 7.6%

Filtrate Loss 19.2 ML "as received"

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	<u>18.38</u>
40	<u>71.59</u>
80	<u>7.86</u>
100	<u>.38</u>
+ 200	<u>.93</u>
-200	<u>.91</u>

Plate Water Absorption: 702

Wash 325 Sieve: 3.5%

Charles Taylor
Technician

Ray Berman
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 6-11-92

Bentonite Supplier: American Colloid

Truck No.: 70244

Moisture 7.6%

Filtrate Loss 19.2 ML "as received"

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	18.38
40	71.59
80	7.86
100	.38
+ 200	.93
-200	.91

Plate Water Absorption: 702

Wash 325 Sieve: 3.5%

Charles Taylor
Technician

Ray Brainerd
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 6-11-92

Bentonite Supplier: American Colloid

Truck No.: 70244

Moisture 7.6%

Filtrate Loss 19.2 ML "as received"

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	18.38
40	71.59
80	7.86
100	.38
+ 200	.93
-200	.91

Plate Water Absorption: 702

Wash 325 Sieve: 3.5%

Charles Taylor
Technician

Ray B. ...
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 7-23-92

Bentonite Supplier: American Colloid

Truck No.: 71054

Moisture 8.0%

Filtrate Loss 22.8 ML

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	<u>24.71</u>
40	<u>71.82</u>
80	<u>3.0</u>
100	<u>.08</u>
+ 200	<u>.20</u>
-200	<u>.36</u>

Plate Water Absorption: 791.5

Wash 325 Sieve: 3.6%

Charles Taylor
Technician

Ray Brannan
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 7-23-92

Bentonite Supplier: American Colloid

Truck No.: 71054

Moisture 8.0%

Filtrate Loss 22.8 ML

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	<u>24.71</u>
40	<u>71.82</u>
80	<u>3.00</u>
100	<u>.08</u>
+ 200	<u>.20</u>
- 200	<u>.36</u>

Plate Water Absorption: 791.5

Wash 325 Sieve: 3.6%

Charles Taylor
Technician

Ray Brosnahan
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 7-23-92

Bentonite Supplier: American Colloid

Truck No.: 71054

Moisture 8.0%

Filtrate Loss 22.8 ML

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	<u>24.71</u>
40	<u>71.82</u>
80	<u>3.0</u>
100	<u>.08</u>
+200	<u>.20</u>
-200	<u>.36</u>

Plate Water Absorption: 791.5

Wash 325 Sieve: 3.6%

Charles Taylor
Technician

Ray Brumby
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

Date: 7-23-92

Bentonite Supplier: American Colloid

Truck No.: 71054

Moisture 8.0%

Filtrate Loss 22.8 ML

Dry Particle Size:

<u>Mesh Sieve Size</u>	<u>% Retained</u>
20	<u>24.71</u>
40	<u>71.82</u>
80	<u>3.0</u>
100	<u>.08</u>
+200	<u>.20</u>
-200	<u>.36</u>

Plate Water Absorption: 791.5

Wash 325 Sieve: 3.6%

Charles Taylor
Technician

Ray Benenahare
Production Manager

PG TECHNOLOGY CO.
3150 1ST AVENUE
SPEARFISH, SD 57783
605-642-8531
FAX: 605-642-8539

To: GEO CON INC.,
2448 South Brooklyn Ave.,
Wellsville, NY 14895

GUNDSEAL ROLL #'S

GUNDLINE ROLL #'S

2160	02014027
2166	"
2167	02014021
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2551	"
2552	"
2553	"
2554	"
2555	"
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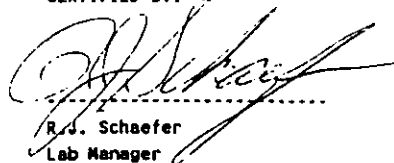
Quality Control Certificate

RAILCAR : RAIX 60872
MATERIAL : HDPE 020 MIL
BATCH # : 111991
ROLL # : 02014027

MANF. DATE : 11/19/1991
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-14 PROJECT # : 6298-14
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 max	0.12	D 1238 E
Density (g/cm ³)	1/SHIFT	0.940 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (psi)	2ND ROLL	1500 min	2576	D 638
T.S. Break (psi)	2ND ROLL	3000 min	3590	Type IV
Elong. Yield %	2ND ROLL	10 min	12	2 ipm
Elong. Break %	2ND ROLL	500 min	596	
Tear Resistance (lbs)	2ND ROLL	10 min	19	D 1004, Die C
Puncture Resistance (lbs)	2ND ROLL	20 min	45	FTMS 101, Method 2065

CERTIFIED BY:


R.J. Schaefer
Lab Manager



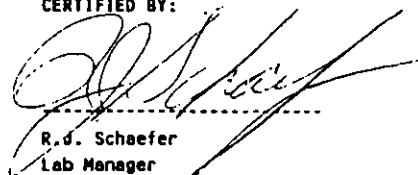
Quality Control Certificate

RAILCAR : PTLX-41720
MATERIAL : HDPE 020 MIL
BATCH # : 111891
ROLL # : 02014021

MANF. DATE : 11/18/1991
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-14 PROJECT # : 6298-14
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	19	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.6	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-2	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 max	0.14	D 1238 E
Density (g/cm3)	1/SHIFT	0.940 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (psi)	2ND ROLL	1500 min	2999	D 638
T.S. Break (psi)	2ND ROLL	3000 min	4461	Type IV
Elong. Yield %	2ND ROLL	10 min	12	2 ipm
Elong. Break %	2ND ROLL	500 min	615	
Tear Resistance (lbs)	2ND ROLL	10 min	15	D 1004, Die C
Puncture Resistance (lbs)	2ND ROLL	20 min	39	FTMS 101, Method 2065

CERTIFIED BY:


R. d. Schaefer
Lab Manager



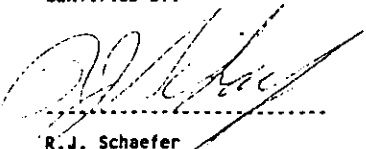
Quality Control Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 021992
ROLL # : 04009890

MANF. DATE : 02/19/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.4	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.09	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.945	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	49	D 638
T.S. Break (ppi)	2ND ROLL	60	85	Type IV
Elong. Yield %	2ND ROLL	10	12	2 ipm
Elong. Break %	2ND ROLL	500	731	
Puncture Resistance (lbs)	2ND ROLL	20	44	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	15	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



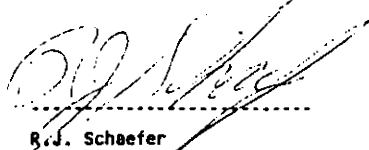
Quality Control Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 022092
ROLL # : 04009894

MANF. DATE : 02/20/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.6	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	55	D 638
T.S. Break (ppi)	2ND ROLL	60	100	Type IV
Elong. Yield %	2ND ROLL	10	13	2 ipm
Elong. Break %	2ND ROLL	500	783	
Puncture Resistance (lbs)	2ND ROLL	20	47	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



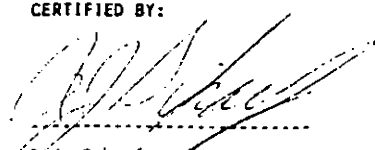
Quality Assurance Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 021992
ROLL # : 04009889

MANF. DATE : 02/19/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	19	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.6	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.09	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.945	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	48	D 638
T.S. Break (ppi)	2ND ROLL	60	94	Type IV
Elong. Yield %	2ND ROLL	10	12	2 ipm
Elong. Break %	2ND ROLL	500	795	
Puncture Resistance (lbs)	2ND ROLL	20	47	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	14	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



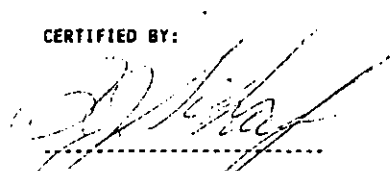
Quality Control Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022492
ROLL # : 04009943

MANF. DATE : 02/24/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.945	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	53	D 638
T.S. Break (ppi)	2ND ROLL	60	99	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	774	
Puncture Resistance (lbs)	2ND ROLL	20	45	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	17	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



Quality Control Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022492
ROLL # : 04009943

MANF. DATE : 02/24/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.945	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	53	D 638
T.S. Break (ppi)	2ND ROLL	60	99	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	774	
Puncture Resistance (lbs)	2ND ROLL	20	45	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	17	D 1004, Die C

CERTIFIED BY:

R.J. Schaefer
Lab Manager



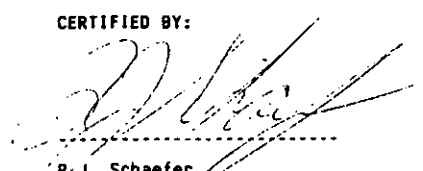
Quality Control Certificate

RAILCAR : RUSX12156
MATERIAL : HOPE 020 MIL
BATCH # : 022392
ROLL # : 04009930

MANF. DATE : 02/23/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.945	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	54	D 638
T.S. Break (ppi)	2ND ROLL	60	112	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	843	
Puncture Resistance (lbs)	2ND ROLL	20	44	FIMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	17	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



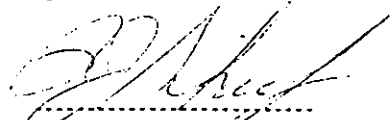
Quality Assurance Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022392
ROLL # : 04009934

MANF. DATE : 02/23/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.5	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.945	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	47	D 638
T.S. Break (ppi)	2ND ROLL	60	103	Type IV
Elong. Yield %	2ND ROLL	10	20	2 ipm
Elong. Break %	2ND ROLL	500	827	
Puncture Resistance (lbs)	2ND ROLL	20	51	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	21	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



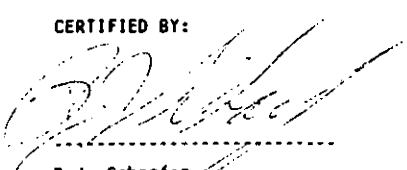
Quality Control Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022392
ROLL # : 04009935

MANF. DATE : 02/23/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.5	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.11	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	52	D 638
T.S. Break (ppi)	2ND ROLL	60	109	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	853	
Puncture Resistance (lbs)	2ND ROLL	20	52	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	20	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



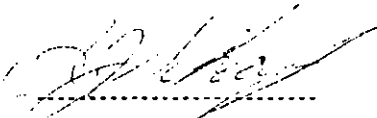
Quality Assurance Certificate

RAILCAR : ELTX1773
MATERIAL : HDPE 020 MIL
BATCH # : 021892
ROLL # : 04009877

MANF. DATE : 02/18/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.4	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.11	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	62	D 638
T.S. Break (ppi)	2ND ROLL	60	108	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	785	
Puncture Resistance (lbs)	2ND ROLL	20	44	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



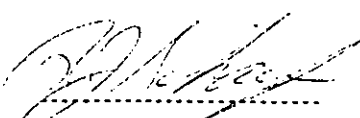
Quality Assurance Certificate

RAILCAR : PSPX6816
MATERIAL : HDPE 020 MIL
BATCH # : 021592
ROLL # : 04009849

MANF. DATE : 02/15/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.2	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.09	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	59	D 638
T.S. Break (ppi)	2ND ROLL	60	111	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	788	
Puncture Resistance (lbs)	2ND ROLL	20	46	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	18	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



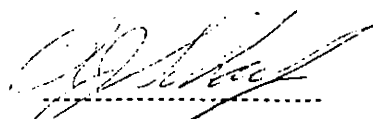
Quality Assurance Certificate

RAILCAR : PTLX41316
MATERIAL : HDPE 020 MIL
BATCH # : 021592
ROLL # : 04009853

MANF. DATE : 02/15/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.2	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.08	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.945	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	59	D 638
T.S. Break (ppi)	2ND ROLL	60	109	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	792	
Puncture Resistance (lbs)	2ND ROLL	20	45	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	19	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



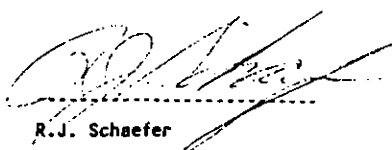
Quality Assurance Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 022092
ROLL # : 04009899

MANF. DATE : 02/20/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.6	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	55	D 638
T.S. Break (ppi)	2ND ROLL	60	98	Type IV
Elong. Yield %	2ND ROLL	10	12	2 ipm
Elong. Break %	2ND ROLL	500	775	
Puncture Resistance (lbs)	2ND ROLL	20	43	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



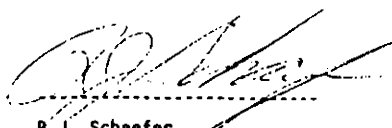
Quality Assurance Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 022092
ROLL # : 04009899

MANF. DATE : 02/20/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.6	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	55	D 638
T.S. Break (ppi)	2ND ROLL	60	98	Type IV
Elong. Yield %	2ND ROLL	10	12	2 ipm
Elong. Break %	2ND ROLL	500	775	
Puncture Resistance (lbs)	2ND ROLL	20	43	FIMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



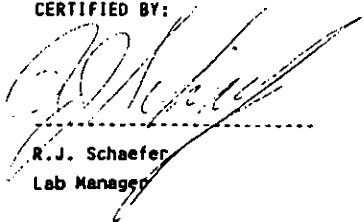
Quality Assurance Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 022192
ROLL # : 04009906

MANF. DATE : 02/21/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.5	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	54	D 638
T.S. Break (ppi)	2ND ROLL	60	103	Type IV
Elong. Yield %	2ND ROLL	10	13	2 ipm
Elong. Break %	2ND ROLL	500	759	
Puncture Resistance (lbs)	2ND ROLL	20	45	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



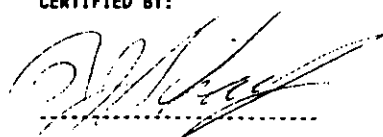
Quality Assurance Certificate

RAILCAR : ELTX1773
MATERIAL : HDPE 020 MIL
BATCH # : 021792
ROLL # : 04009873

MANF. DATE : 02/17/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.09	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.945	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	56	D 638
T.S. Break (ppi)	2ND ROLL	60	122	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	909	
Puncture Resistance (lbs)	2ND ROLL	20	52	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	17	D 1004, Die C

CERTIFIED BY:


B.J. Schaefer
Lab Manager



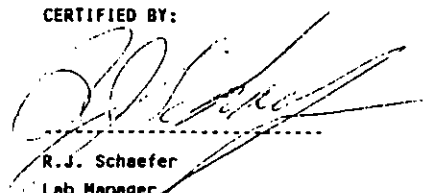
Quality Control Certificate

RAILCAR : PTLX41316
MATERIAL : HDPE 020 MIL
BATCH # : 021792
ROLL # : 04009870

MANF. DATE : 02/17/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	51	D 638
T.S. Break (ppi)	2ND ROLL	60	109	Type IV
Elong. Yield %	2ND ROLL	10	19	2 ipm
Elong. Break %	2ND ROLL	500	811	
Puncture Resistance (lbs)	2ND ROLL	20	51	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



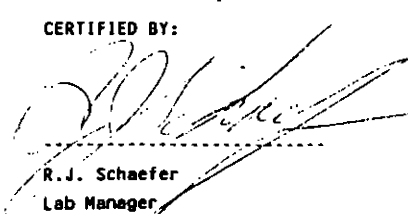
Quality Control Certificate

RAILCAR : PTLX41316
MATERIAL : HDPE 020 MIL
BATCH # : 021792
ROLL # : 04009870

MANF. DATE : 02/17/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	51	D 638
T.S. Break (ppi)	2ND ROLL	60	109	Type IV
Elong. Yield %	2ND ROLL	10	19	2 ipm
Elong. Break %	2ND ROLL	500	811	
Puncture Resistance (lbs)	2ND ROLL	20	51	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



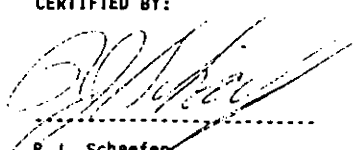
Quality Assurance Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 021892
ROLL # : 04009879

MANF. DATE : 02/18/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.4	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.11	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	53	D 638
T.S. Break (ppi)	2ND ROLL	60	109	Type IV
Elong. Yield %	2ND ROLL	10	13	2 ipm
Elong. Break %	2ND ROLL	500	843	
Puncture Resistance (lbs)	2ND ROLL	20	42	FIMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	15	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



Quality Control Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 022092
ROLL # : 04009898

MANF. DATE : 02/20/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	19	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.6	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (psi)	2ND ROLL	30	55	D 638
T.S. Break (psi)	2ND ROLL	60	98	Type IV
Elong. Yield %	2ND ROLL	10	12	2 ipm
Elong. Break %	2ND ROLL	500	775	
Puncture Resistance (lbs)	2ND ROLL	20	43	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:

R.J. Schaefer
Lab Manager



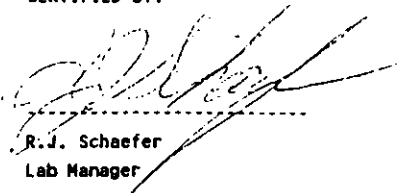
Quality Control Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022292
ROLL # : 04009918

MANF. DATE : 02/22/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.12	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	54	D 638
T.S. Break (ppi)	2ND ROLL	60	100	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	803	
Puncture Resistance (lbs)	2ND ROLL	20	50	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	19	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



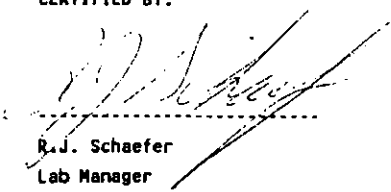
Quality Control Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022192
ROLL # : 04009916

MANF. DATE : 02/21/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.12	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	57	D 638
T.S. Break (ppi)	2ND ROLL	60	116	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	850	
Puncture Resistance (lbs)	2ND ROLL	20	42	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	18	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



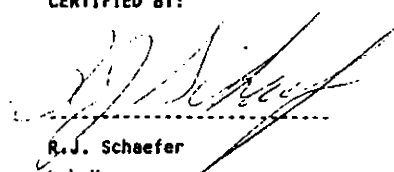
Quality Control Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022192
ROLL # : 04009916

MANF. DATE : 02/21/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.12	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	57	D 638
T.S. Break (ppi)	2ND ROLL	60	116	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	850	
Puncture Resistance (lbs)	2ND ROLL	20	42	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	18	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



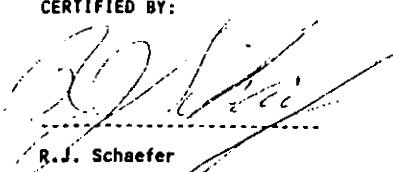
Quality Control Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 021892
ROLL # : 04009880

MANF. DATE : 02/18/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.4	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.11	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (psi)	2ND ROLL	30	49	D 638
T.S. Break (psi)	2ND ROLL	60	110	Type IV
Elong. Yield %	2ND ROLL	10	18	2 ipm
Elong. Break %	2ND ROLL	500	872	
Puncture Resistance (lbs)	2ND ROLL	20	45	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



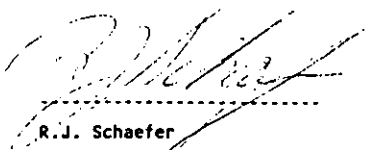
Quality Assurance Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 022192
ROLL # : 04009908

MANF. DATE : 02/21/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	19	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.5	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	55	D 638
T.S. Break (ppi)	2ND ROLL	60	110	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	817	
Puncture Resistance (lbs)	2ND ROLL	20	49	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



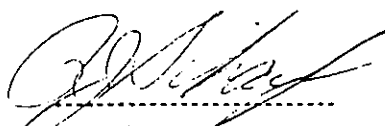
Quality Control Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 022192
ROLL # : 04009907

MANF. DATE : 02/21/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.5	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	55	D 638
T.S. Break (ppi)	2ND ROLL	60	110	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	817	
Puncture Resistance (lbs)	2ND ROLL	20	49	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



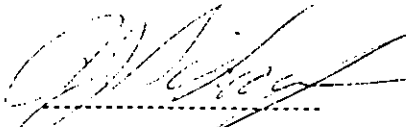
Quality Control Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022292
ROLL # : 04009920

MANF. DATE : 02/22/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.11	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.944	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	57	D 638
T.S. Break (ppi)	2ND ROLL	60	116	Type 1V
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	868	
Puncture Resistance (lbs)	2ND ROLL	20	47	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	17	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



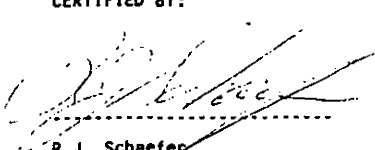
Quality Control Certificate

RAILCAR : PSPX6816
MATERIAL : HDPE 020 MIL
BATCH # : 021592
ROLL # : 04009850

MANF. DATE : 02/15/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.09	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	59	D 638
T.S. Break (ppi)	2ND ROLL	60	116	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	809	
Puncture Resistance (lbs)	2ND ROLL	20	46	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	19	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



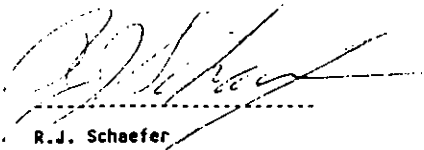
Quality Control Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 022092
ROLL # : 04009904

MANF. DATE : 02/20/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.5	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	54	D 638
T.S. Break (ppi)	2ND ROLL	60	103	Type IV
Elong. Yield %	2ND ROLL	10	13	2 ipm
Elong. Break %	2ND ROLL	500	759	
Puncture Resistance (lbs)	2ND ROLL	20	45	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



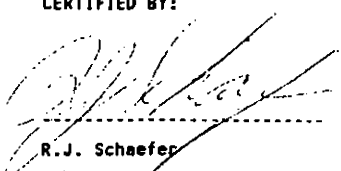
Quality Assurance Certificate

RAILCAR : PSPX6816
MATERIAL : HDPE 020 MIL
BATCH # : 021592
ROLL # : 04009847

MANF. DATE : 02/15/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.2	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.09	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	71	D 638
T.S. Break (ppi)	2ND ROLL	60	133	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	809	
Puncture Resistance (lbs)	2ND ROLL	20	54	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	18	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



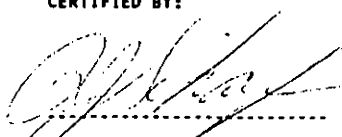
Quality Assurance Certificate

RAILCAR : PSPX6816
MATERIAL : HDPE 020 MIL
BATCH # : 021592
ROLL # : 04009847

MANF. DATE : 02/15/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.2	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.09	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	71	D 638
T.S. Break (ppi)	2ND ROLL	60	133	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	809	
Puncture Resistance (lbs)	2ND ROLL	20	54	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	18	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



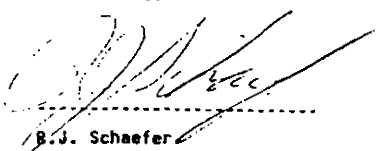
Quality Assurance Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 022092
ROLL # : 04009903

MANF. DATE : 02/20/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.5	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (psi)	2ND ROLL	30	56	D 638
T.S. Break (psi)	2ND ROLL	60	108	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	816	
Puncture Resistance (lbs)	2ND ROLL	20	43	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	18	D 1004, Die C

CERTIFIED BY:


B.J. Schaefer
Lab Manager



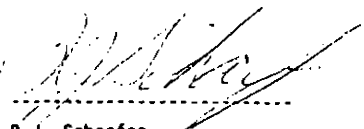
Quality Assurance Certificate

RAILCAR : PTLX41316
MATERIAL : HDPE 020 MIL
BATCH # : 021692
ROLL # : 04009859

MANF. DATE : 02/16/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.6	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.09	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	51	D 638
T.S. Break (ppi)	2ND ROLL	60	98	Type IV
Elong. Yield %	2ND ROLL	10	13	2 ipm
Elong. Break %	2ND ROLL	500	767	
Puncture Resistance (lbs)	2ND ROLL	20	49	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	18	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



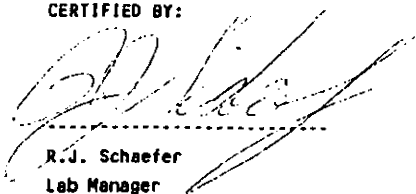
Quality Control Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022392
ROLL # : 04009931

MANF. DATE : 02/23/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.945	D 1505 A
Tensile Properties:				
T.S. Yield (psi)	2ND ROLL	30	52	D 638
T.S. Break (psi)	2ND ROLL	60	106	Type IV
Elong. Yield %	2ND ROLL	10	19	2 ipm
Elong. Break %	2ND ROLL	500	798	
Puncture Resistance (lbs)	2ND ROLL	20	48	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	20	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



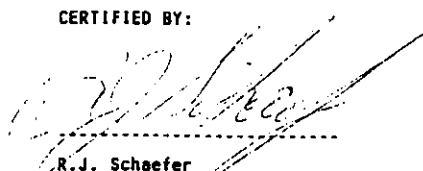
Quality Assurance Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022292
ROLL # : 04009925

MANF. DATE : 02/22/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.09	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	53	D 638
T.S. Break (ppi)	2ND ROLL	60	112	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	871	
Puncture Resistance (lbs)	2ND ROLL	20	49	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	18	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



Quality Control Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 022192
ROLL # : 04009910

MANF. DATE : 02/21/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.5	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.08	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	48	D 638
T.S. Break (ppi)	2ND ROLL	60	110	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	867	
Puncture Resistance (lbs)	2ND ROLL	20	44	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:

R.J. Schaefer
Lab Manager



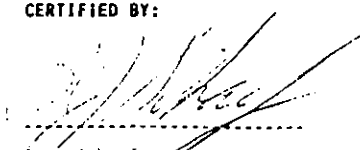
Quality Control Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022192
ROLL # : 04009912

MANF. DATE : 02/21/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.4	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.08	D 1238 E
Density (g/cm ³)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	42	D 638
T.S. Break (ppi)	2ND ROLL	60	82	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	744	
Puncture Resistance (lbs)	2ND ROLL	20	45	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R. J. Schaefer
Lab Manager



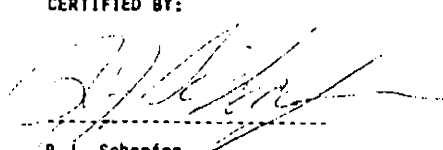
Quality Control Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022192
ROLL # : 04009913

MANF. DATE : 02/21/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.4	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.12	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	48	D 638
T.S. Break (ppi)	2ND ROLL	60	102	Type IV
Elong. Yield %	2ND ROLL	10	13	2 ipm
Elong. Break %	2ND ROLL	500	839	
Puncture Resistance (lbs)	2ND ROLL	20	46	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	17	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



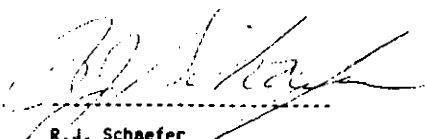
Quality Assurance Certificate

RAILCAR : RUSX12067
MATERIAL : HDPE 020 MIL
BATCH # : 022092
ROLL # : 04009895

MANF. DATE : 02/20/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-17 PROJECT # : 6298-17
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.6	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	1.10 min	0.10	D 1238 E
Density (g/cm3)	1/SHIFT	1.000 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	55	D 638
T.S. Break (ppi)	2ND ROLL	60	100	Type IV
Elong. Yield %	2ND ROLL	10	13	2 ipm
Elong. Break %	2ND ROLL	500	783	
Puncture Resistance (lbs)	2ND ROLL	20	47	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Lab Manager



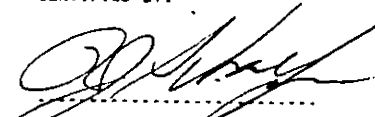
Quality Assurance Certificate

RAILCAR : UTCX59571
MATERIAL : HDPE 020 MIL
BATCH # : 022792
ROLL # : 04009977

MANF. DATE : 02/27/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-19 PROJECT # : 6298-19
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-2	D 3015
Melt Index (g/10 min)	1/SHIFT	0.30 max	0.18	D 1238 E
Density (g/cm ³)	1/SHIFT	0.940 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	53	D 638
T.S. Break (ppi)	2ND ROLL	60	104	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	825	
Puncture Resistance (lbs)	2ND ROLL	20	47	FIMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	15	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Quality Manager



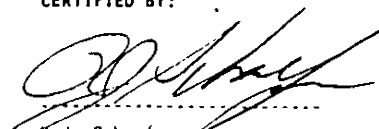
Quality Assurance Certificate

RAILCAR : UTCX59571
MATERIAL : HDPE 020 MIL
BATCH # : 022792
ROLL # : 04009977

MANF. DATE : 02/27/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-19 PROJECT # : 6298-19
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.3	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-2	D 3015
Melt Index (g/10 min)	1/SHIFT	0.30 max	0.18	D 1238 E
Density (g/cm3)	1/SHIFT	0.940 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	53	D 638
T.S. Break (ppi)	2ND ROLL	60	104	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	825	
Puncture Resistance (lbs)	2ND ROLL	20	47	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	15	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Quality Manager



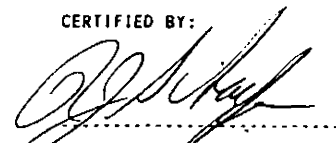
Quality Assurance Certificate

RAILCAR : RUSX12156
MATERIAL : HDPE 020 MIL
BATCH # : 022592
ROLL # : 04009949

MANF. DATE : 02/25/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-19 PROJECT # : 6298-19
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	21	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.5	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	0.30 max	0.08	D 1238 E
Density (g/cm3)	1/SHIFT	0.940 min	0.947	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	59	D 638
T.S. Break (ppi)	2ND ROLL	60	121	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	908	
Puncture Resistance (lbs)	2ND ROLL	20	54	FIMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	19	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Quality Manager



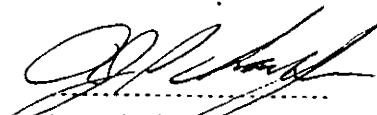
Quality Assurance Certificate

RAILCAR : UTCX59571
MATERIAL : HDPE 020 MIL
BATCH # : 022792
ROLL # : 04009973

MANF. DATE : 02/27/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-19 PROJECT # : 6298-19
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.2	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	0.30 max	0.16	D 1238 E
Density (g/cm ³)	1/SHIFT	0.940 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	50	D 638
T.S. Break (ppi)	2ND ROLL	60	89	Type IV
Elong. Yield %	2ND ROLL	10	16	2 ipm
Elong. Break %	2ND ROLL	500	776	
Puncture Resistance (lbs)	2ND ROLL	20	41	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	16	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Quality Manager



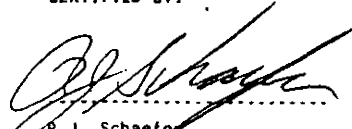
Quality Control Certificate

RAILCAR : UTCX59571
MATERIAL : HDPE 020 MIL
BATCH # : 022892
ROLL # : 04009980

MANF. DATE : 02/28/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-19 PROJECT # : 6298-19
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.2	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	0.30 max	0.16	D 1238 E
Density (g/cm3)	1/SHIFT	0.940 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	57	D 638
T.S. Break (ppi)	2ND ROLL	60	102	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	812	
Puncture Resistance (lbs)	2ND ROLL	20	46	FIMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	15	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Quality Manager



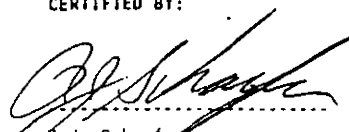
Quality Control Certificate

RAILCAR : UTCX59571
MATERIAL : HDPE 020 MIL
BATCH # : 022892
ROLL # : 04009980

MANF. DATE : 02/28/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-19 PROJECT # : 6298-19
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.2	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-1	D 3015
Melt Index (g/10 min)	1/SHIFT	0.30 max	0.16	D 1238 E
Density (g/cm3)	1/SHIFT	0.940 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	57	D 638
T.S. Break (ppi)	2ND ROLL	60	102	Type IV
Elong. Yield %	2ND ROLL	10	14	2 ipm
Elong. Break %	2ND ROLL	500	812	
Puncture Resistance (lbs)	2ND ROLL	20	46	FTMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	15	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Quality Manager



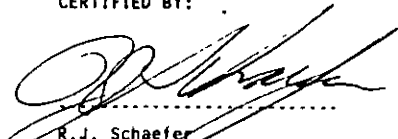
Quality Control Certificate

RAILCAR : UTCX59571
MATERIAL : HDPE 020 MIL
BATCH # : 022792
ROLL # : 04009974

MANF. DATE : 02/27/1992
PROJECT NAME : P.G. TECHNOLOGY
MR NUMBER : 6298-19 PROJECT # : 6298-19
LOCATION : HOUSTON TX

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	18 to 22	20	D 1593
Carbon Black (%)	1/SHIFT	2.0 to 3.0	2.2	D 1603
Carbon Black Dispersion	1/SHIFT	A-1/A-2/B-1	A-2	D 3015
Melt Index (g/10 min)	1/SHIFT	0.30 max	0.18	D 1238 E
Density (g/cm3)	1/SHIFT	0.940 min	0.946	D 1505 A
Tensile Properties:				
T.S. Yield (ppi)	2ND ROLL	30	51	D 638
T.S. Break (ppi)	2ND ROLL	60	93	Type IV
Elong. Yield %	2ND ROLL	10	15	2 ipm
Elong. Break %	2ND ROLL	500	829	
Puncture Resistance (lbs)	2ND ROLL	20	43	FIMS 101, Method 2065
Tear Resistance (lbs)	2ND ROLL	10	15	D 1004, Die C

CERTIFIED BY:


R.J. Schaefer
Quality Manager



TECHNOLOGY CO.

3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: May 21, '92

Test Results

a. Average Thickness..... .19 in.
b. Average Total Weight..... 1.16 lbs./ft.²
Nominal Geomembrane Weight..... .1 lbs./ft.²
Bentonite Coating Weight..... 1.06 lbs./ft.²

Test Results For

Roll #: 2135 which covers rolls from
2126 to # 2184



3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 13, '92

Test Results

a.	Average Thickness.....	.186	in.
b.	Average Total Weight.....	1.19	lbs./ft. ²
	Nominal Geomembrane Weight.....	.1	lbs./ft. ²
	Bentonite Coating Weight.....	1.09	lbs./ft. ²

Test Results For

Roll #: 2563 which covers rolls from
2549 to # 2573



3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 13, '92

Test Results

a. Average Thickness..... .196 in.
b. Average Total Weight..... 1.187 lbs./ft.²
Nominal Geomembrane Weight..... .1 lbs./ft.²
Bentonite Coating Weight..... 1.087 lbs./ft.²

Test Results For

Roll #: 2592 which covers rolls from
2574 to # 2598



3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 20, '92

Test Results

a. Average Thickness..... .18 in.
b. Average Total Weight..... 1.14 lbs./ft.²
Nominal Geomembrane Weight..... .1 lbs./ft.²
Bentonite Coating Weight..... 1.04 lbs./ft.²

Test Results For

Roll #: 2630 which covers rolls from
2627 to # 2651



3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 20, '92

Test Results

a. Average Thickness..... .178 in.
b. Average Total Weight..... 1.22 lbs./ft.²
Nominal Geomembrane Weight..... .1 lbs./ft.²
Bentonite Coating Weight..... 1.12 lbs./ft.²

Test Results For

Roll #: 2666 which covers rolls from
2652 to # 2676



3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 20, '92

Test Results

a. Average Thickness..... .176 in.
b. Average Total Weight..... 1.20 lbs./ft.²
Nominal Geomembrane Weight..... .1 lbs./ft.²
Bentonite Coating Weight..... 1.10 lbs./ft.²

Test Results For

Roll #: 2683 which covers rolls from
2677 to # 2690



3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 23, '92

Test Results

a. Average Thickness..... .20 in.
b. Average Total Weight..... 1.21 lbs./ft.²
Nominal Geomembrane Weight..... .1 lbs./ft.²
Bentonite Coating Weight..... 1.11 lbs./ft.²

Test Results For

Roll #: 2694 which covers rolls from
2691 to # 2715



3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 23, '92

Test Results

a. Average Thickness..... .18 in.
b. Average Total Weight..... 1.15 lbs./ft.²
Nominal Geomembrane Weight..... .1 lbs./ft.²
Bentonite Coating Weight..... 1.05 lbs./ft.²

Test Results For

Roll #: 2720 which covers rolls from
2716 to # 2740



3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 23, '92

Test Results

a. Average Thickness..... .19 in.
b. Average Total Weight..... 1.17 lbs./ft.²
Nominal Geomembrane Weight..... .1 lbs./ft.²
Bentonite Coating Weight..... 1.07 lbs./ft.²

Test Results For

Roll #: 2746 which covers rolls from
2741 to # 2765



3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 23, '92

Test Results

a. Average Thickness......184 in.
b. Average Total Weight.....1.19 lbs./ft.²
Nominal Geomembrane Weight......1 lbs./ft.²
Bentonite Coating Weight.....1.09 lbs./ft.²

Test Results For

Roll #: 2774 which covers rolls from
2766 to # 2790



TECHNOLOGY CO.

3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 27, '92

Test Results

a.	Average Thickness.....	<u>.188</u>	in.
b.	Average Total Weight.....	<u>1.19</u>	lbs./ft. ²
	Nominal Geomembrane Weight.....	<u>.1</u>	lbs./ft. ²
	Bentonite Coating Weight.....	<u>1.09</u>	lbs./ft. ²

Test Results For

Roll #: 2824 which covers rolls from
2819 to # 2844



3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 27, 92

Test Results

a.	Average Thickness.....	.188	in.
b.	Average Total Weight.....	1.18	lbs./ft. ²
	Nominal Geomembrane Weight.....	.1	lbs./ft. ²
	Bentonite Coating Weight.....	1.08	lbs./ft. ²

Test Results For

Roll #: 2857 which covers rolls from
2845 to # 2869



3150 1st. Avenue
Spearfish, SD 57783
605-642-8531

GUNDSEAL

FINAL PRODUCT WEIGHT

Manufacturing Date: July 27, 92

Test Results

a. Average Thickness..... .186 in.
b. Average Total Weight..... 1.16 lbs./ft.²
Nominal Geomembrane Weight..... .1 lbs./ft.²
Bentonite Coating Weight..... 1.06 lbs./ft.²

Test Results For

Roll #: 2875 which covers rolls from
2870 to # 2877



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

DENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 5-21-92

Time: P.M.

Moisture Content: 6.5%

Filtrate Loss: 19.2 ML

Free Swell: 29 ML, as received

Charles Taylor

Technician

Ray Buchanan

Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

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BENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7-13-92

Time: A.M.

Moisture Content: 7.5%

Filtrate Loss: 27.2 ML

Free Swell: 30 ML "as received"

Charles Taylor
Technician

Ry Bussanah
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7-13-92

Time: P.M.

Moisture Content: 6.9%

Filtrate Loss: 21.2 ML

Free Swell: 24 ML "as received"

Charles Timbly
Technician

Ray Brennan
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7-20-92

Time: A.M.

Moisture Content: 6.9%

Filtrate Loss: 21.2 ML

Free Swell: 24 ML "as received"

Charles Taylor

Technician

Roy Brasnahan

Production Manager



TECHNOLOGY CO.

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• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7-20-92

Time: P.M.

Moisture Content: 7.4%

Filtrate Loss: 23.2 ML

Free Swell: 26.5 ML "as received"

Charles Taylor
Technician

Ray Branson
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

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605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7-20-92

Time: P.M.

Moisture Content: 7.4%

Filtrate Loss: 23.2 ML

Free Swell: 26.5 ML "as received"

Charles Taylor
Technician

Ray Brannan
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7-23-92

Time: A.M.

Moisture Content: 7.4%

Filtrate Loss: 23.2 ML

Free Swell: 26.5 ML "as received"

Charlie Taylor

Technician

Ray Brannan

Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7-23-92

Time: A.M.

Moisture Content: 7.4%

Filtrate Loss: 23.2 ML

Free Swell: 26.5 ML "as received"

Charles Taylor
Technician

Ray Brumfield
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

DENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7-23-92

Time: P.M.

Moisture Content: 7.2%

Filtrate Loss: 23.6 ML

Free Swell: 31.5 ML "as Received"

Charles Taylor
Technician

Ray Brown
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7-23-92

Time: P.M.

Moisture Content: 7.2%

Filtrate Loss: 23.6 ML

Free Swell: 31.5 ML "as received"

Charles Taylor
Technician

Ray Brannan
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7-27-92

Time: A.M.

Moisture Content: 7.2%

Filtrate Loss: 23.6 ML

Free Swell: 31.5 ML "as received"

Charles Taylor
Technician

Ray B. Brennan
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7.27-92

Time: P.M.

Moisture Content: 8.4%

Filtrate Loss: 24.4 ML

Free Swell: 30 ML "as received"

Charles Taylor
Technician

Roy Bensen
Production Manager



TECHNOLOGY CO.

3150 1ST AVENUE •

• SPEARFISH, SOUTH DAKOTA 57783

605-642-8531 • FAX 605-642-8539

BENTONITE QUALITY CONTROL VERIFICATION

DAILY PRODUCTION

Date: 7-27-92

Time: P.M.

Moisture Content: 8.4%

Filtrate Loss: 24.4 ML

Free Swell: 30 ML "as received"

Charles Taylor
Technician

Roy B. Breen
Production Manager

**WARRANTY LETTER CONCERNING
GAS VENT STONE**

P1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 16
CONTRACT NO. C91028-003-01
GUNDSKAL MATERIAL WARRANTY
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles CA 90017

Attn: Robert Ivy
Construction Supervisor

Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

NOV 10 1987
NOV 03 1987
RECEIVED
RBN

October 8, 1992

Mr. Chris Bailey
Geo Con Inc.
2448 South Brooklyn Avenue
Wellsville, NY 14895

RE: Arco Material Warranty

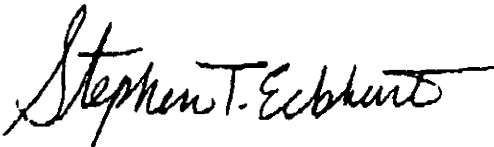
Dear Mr. Bailey:

I am in receipt of a sample and sieve analysis of the #2 stone to be used as a gas venting layer at the referenced project.

Please be advised if Polyfelt TS 700 is used to separate the #2 Stone from the Gundseal and 60 mil VLT layers, the proposed change in material will not adversely affect our warranties.

If you have any questions, do not hesitate to contact me.

Sincerely,



Stephen T. Eckhart
Northeast Zone Manager

cc: MR File #7646-01

GEOMEMBRANE

- **GEOSYNTEC CONSULTANTS' CONFORMANCE
TEST DATA**
- **CERTIFICATES OF COMPLIANCE**

**GEOSYNTEC CONSULTANTS'
CONFORMANCE TEST DATA**

GEOMEMBRANE TEST RESULTS

CLIENT: GEOSYNTEC CONSULTANTS
PROJECT: ARCO-WELLSVILLE
CONTACT: MR. ROGER NORTH
GEOSYNTEC JOB NO.:

MATERIAL: POLYETHYLENE (TEXTURED)
CLIENT ID: AWT-1 / ROLL#03016328
DATE RECEIVED: 07/28/92
DATE TESTED: 07/29/92

INDIVIDUAL SPECIMENS

[illegible]

SUMMARY RESULTS

[illegible]

COMMENTS
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE

COPYRIGHT 1992 GEOSYNTEC CONSULTANTS

GEOMEMBRANE TEST RESULTS

CLIENT: GEOSYNTEC CONSULTANTS
PROJECT: ARCO-WELLSVILLE
CONTACT: MR. ROGER NORTH
GEOSYNTEC JOB NO.:

MATERIAL: POLYETHYLENE (TEXTURED)
CLIENT ID: AWT-2 / ROLL#03016341
DATE RECEIVED: 07/28/92
DATE TESTED: 07/29/92

INDIVIDUAL SPECIMENS

SUMMARY RESULTS

[illegible][illegible]

COMMENTS
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE

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GEOMEMBRANE TEST RESULTS

CLIENT: GEOSYNTEC CONSULTANTS
PROJECT: ARCO-WELLSVILLE
CONTACT: MR. ROGER NORTH
GEOSYNTEC JOB NO.:

MATERIAL:	POLYETHYLENE (TEXTURED)
CLIENT ID:	AWT-3 / ROLL#03016365
DATE RECEIVED:	07/28/92
DATE TESTED:	07/29/92

INDIVIDUAL SPECIMENS

SUMMARY RESULTS

[illegible]

COMMENTS
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE

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Materials Testing Laboratory

GEOMEMBRANE TEST RESULTS

CLIENT: GEOSYNTEC CONSULTANTS
PROJECT: ARCO-WELLSVILLE
CONTACT: MR. ROGER NORTH
GEOSYNTEC JOB NO.:

MATERIAL:	POLYETHYLENE (TEXTURED)
CLIENT ID:	AWT-4 / ROLL#03016373
DATE RECEIVED:	07/28/92
DATE TESTED:	07/29/92

INDIVIDUAL SPECIMENS

SUMMARY RESULTS

[illegible][illegible]

COMMENTS
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE

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CERTIFICATES OF COMPLIANCE

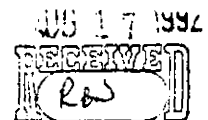
P1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 5
CONTRACT NO. C91027-003-01
60 MIL VLDPE TEXTURED GEOMEMBRANE
CERTIFICATES OF COMPLIANCE
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor



Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

Gundle Lining Systems Inc



19103 Gundle Road
Houston, Texas 77073-3598
U.S.A.

Phone: (713) 443-8564
Toll Free: (800) 435-2008
Telex: 166657 GUNDLE HOU
FAX: (713) 875-6010

LETTER OF TRANSMITTAL

DATE August 7, 1992
M.R. NO. 7646-01
JOB NAME GEO CON/WELLSVILLE
PO FAX

GEO CON, INC.
4075 MONROEVILLE BOULEVARD
CORPORATE ONE, BUILDING II, STE. 400
MONROEVILLE PA 15146
ATTN: DAVE SANDSTROM

TRANSMITTED VIA: FEDERAL EXPRESS STANDARD DELIVERY
FEDERAL EXPRESS NO: 6104613986

GENTLEMEN: We are sending you:

XX_QC Documentation ___ Samples ___ Copy of letter ___ Original purchase order
___ Certification letter ___ Specifications ___ Submittals ___ Material warranty

No. of Copies	Description of items attached
4	QUALITY ASSURANCE CERTIFICATES
7	QUALITY CONTROL CERTIFICATES
1	UNION CARBIDE RESIN CERTIFICATE

THESE ARE TRANSMITTED AS NOTED BELOW:

___ For approval ___ Approved as noted ___ Resubmit ___ Copies for approval
XX_ For your use ___ Returned for corrections ___ Approval as Submitted
XX_ As requested ___ Return ___ For review and comment

GUNDLE LINING PACKING LIST: 25529

ROLL NUMBERS: SEE ATTACHED

APPROVAL

DATE

August 7 1992



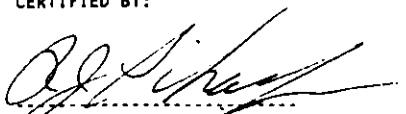
Quality Assurance Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072192
ROLL # : 03016333

MANF. DATE : 07/21/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	3.0	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.24	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	185	Type IV
Elong. Break %	40,000	300	1083	
Puncture Resistance (lbs)	40,000	57	121	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	42	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


W.J. Schaefer
Quality Manager



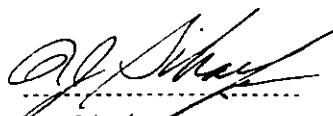
Quality Control Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072192
ROLL # : 03016334

MANF. DATE : 07/21/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	3.0	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.24	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	191	Type IV
Elong. Break %	40,000	300	1054	
Puncture Resistance (lbs)	40,000	57	106	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	44	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



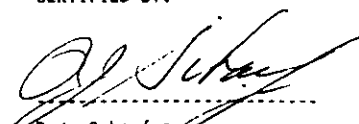
Quality Control Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072292
ROLL # : 03016342

MANF. DATE : 07/22/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.3	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.25	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.921	D 1505 A
Tensile Properties:				
T.S. Break (psi)	40,000	70	192	Type IV
Elong. Break %	40,000	300	1107	
Puncture Resistance (lbs)	40,000	57	94	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



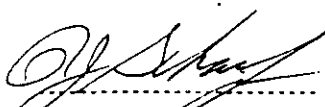
Quality Control Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072292
ROLL # : 03016341

MANF. DATE : 07/22/1992
PROJECT NAME : GEO COM, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.3	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.25	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.921	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	204	Type IV
Elong. Break %	40,000	300	1161	
Puncture Resistance (lbs)	40,000	57	104	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



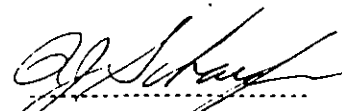
Quality Assurance Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072292
ROLL # : 03016340

MANF. DATE : 07/22/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	3.0	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.24	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	188	Type IV
Elong. Break %	40,000	300	1021	
Puncture Resistance (lbs)	40,000	57	78	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	38	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



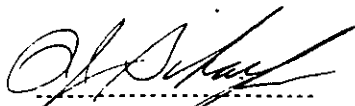
Quality Control Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072292
ROLL # : 03016339

MANF. DATE : 07/22/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	3.0	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.24	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	188	Type IV
Elong. Break %	40,000	300	1021	
Puncture Resistance (lbs)	40,000	57	78	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	38	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



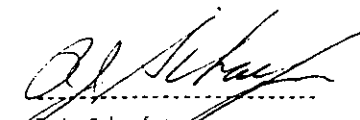
Quality Assurance Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072292
ROLL # : 03016338

MANF. DATE : 07/22/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	3.0	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.24	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	206	Type IV
Elong. Break %	40,000	300	1155	
Puncture Resistance (lbs)	40,000	57	92	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	38	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



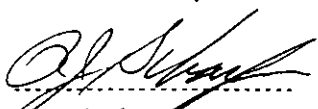
Quality Control Certificate

RAILCAR : CCBX55020
MATERIAL : VL7060M000
BATCH # : 072292
ROLL # : 03016337

MANF. DATE : 07/22/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	3.0	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.24	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	206	Type IV
Elong. Break %	40,000	300	1155	
Puncture Resistance (lbs)	40,000	57	92	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	38	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


E.J. Schaefer
Quality Manager



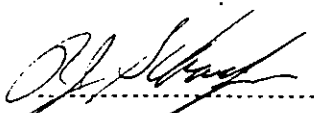
Quality Control Certificate

RAILCAR : CCBX55020
MATERIAL : VL7060M000
BATCH # : 072192
ROLL # : 03016330

MANF. DATE : 07/21/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.9	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	197	Type IV
Elong. Break %	40,000	300	1140	
Puncture Resistance (lbs)	40,000	57	117	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



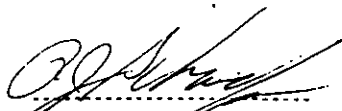
Quality Assurance Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072192
ROLL # : 03016329

MANF. DATE : 07/21/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MOOREVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.8	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.30	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	189	Type IV
Elong. Break %	40,000	300	1095	
Puncture Resistance (lbs)	40,000	57	104	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	42	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



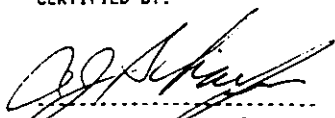
Quality Control Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072192
ROLL # : 03016328

MANF. DATE : 07/21/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.8	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.30	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	189	Type IV
Elong. Break %	40,000	300	1095	
Puncture Resistance (lbs)	40,000	57	104	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	42	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager

JUL-07-1992 12:19 FROM UCC&P SEADRIFT, TX.

TO

917138756010

P.02/03

PRODUCT QUALITY REPORT

825-6010
INX NO. 713-~~230-6787~~
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 7, 1992

PRODUCT NAME DFDB-1506 NT
BLEND NUMBER 235967
QUANTITY, LBS. 170,900
CONTAINER CCBX55020
CUSTOMER ORDER NO. S013048
UCC ORDER NO. 441302
SHIPPING DATE 07/06

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX GTM 0.26
MELT FLOW INDEX GTM 20.
DENSITY ASTM GCC 0.909

ANALYSIS NO. 460624


QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

Gundle Lining Systems Inc



19103 Gundle Road
Houston, Texas 77073-3598
U.S.A.

Phone: (713) 443-8564
Toll Free: (800) 435-2008
Telex: 166657 GUNDLE HOU
FAX: (713) 875-6010

LETTER OF TRANSMITTAL

DATE August 3, 1992
M.R. NO. 7646-01
JOB NAME GEO CON INC./WELLSVILLE
PO FAX

GEO CON, INC.
4075 MONROEVILLE BOULEVARD
CORPORATE ONE, BUILDING II, STE. 400
MONROEVILLE PA 15146
ATTN: DAVE SANDSTROM

TRANSMITTED VIA: FEDERAL EXPRESS PRIORITY ONE
FEDERAL EXPRESS NO: 2043701026

GENTLEMEN: We are sending you:

XX_QC Documentation ___ Samples ___ Copy of letter ___ Original purchase order
___ Certification letter ___ Specifications ___ Submittals ___ Material warranty

No. of Copies	Description of items attached
6	QUALITY ASSURANCE CERTIFICATES
5	QUALITY CONTROL CERTIFICATES
2	UNION CARBIDE RESIN CERTIFICATE

THESE ARE TRANSMITTED AS NOTED BELOW:

___ For approval ___ Approved as noted ___ Resubmit ___ Copies for approval
XX_ For your use ___ Returned for corrections ___ Approval as Submitted
XX_ As requested ___ Return ___ For review and comment

GUNDLE LINING PACKING LIST: 25526

ROLL NUMBERS: SEE ATTACHED

APPROVAL

DATE

AUG 03 1992



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016378

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	191	Type IV
Elong. Break %	40,000	300	1081	
Puncture Resistance (lbs)	40,000	57	88	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	43	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:

R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072592
ROLL # : 03016382

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.926	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	205	Type IV
Elong. Break %	40,000	300	1152	
Puncture Resistance (lbs)	40,000	57	107	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	39	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:

R.J. Schaefer
Quality Manager



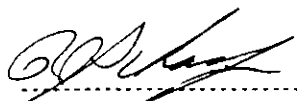
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLTO60M000
BATCH # : 072492
ROLL # : 03016377

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	191	Type IV
Elong. Break %	40,000	300	1081	
Puncture Resistance (lbs)	40,000	57	88	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	43	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



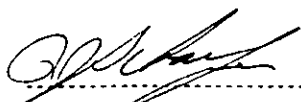
Quality Assurance Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072392
ROLL # : 03016361

MANF. DATE : 07/23/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.4	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	196	Type IV
Elong. Break %	40,000	300	1089	
Puncture Resistance (lbs)	40,000	57	124	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	42	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



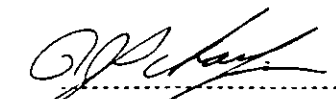
Quality Control Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072292
ROLL # : 03016348

MANF. DATE : 07/22/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	192	Type IV
Elong. Break %	40,000	300	1105	
Puncture Resistance (lbs)	40,000	57	111	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	38	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Control Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072292
ROLL # : 03016346

MANF. DATE : 07/22/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	188	Type IV
Elong. Break %	40,000	300	1098	
Puncture Resistance (lbs)	40,000	57	108	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072292
ROLL # : 03016347

MANF. DATE : 07/22/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	188	Type IV
Elong. Break %	40,000	300	1098	
Puncture Resistance (lbs)	40,000	57	108	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:

R.J. Schaefer
Quality Manager



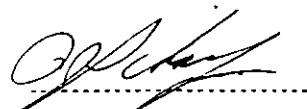
Quality Control Certificate

RAILCAR : CCBX58323
MATERIAL : VLT060M000
BATCH # : 072192
ROLL # : 03016332

MANF. DATE : 07/21/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.9	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	185	Type IV
Elong. Break %	40,000	300	1083	
Puncture Resistance (lbs)	40,000	57	121	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	42	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



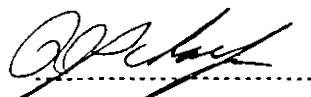
Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016373

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.928	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	198	Type IV
Elong. Break %	40,000	300	1126	
Puncture Resistance (lbs)	40,000	57	113	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	42	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016374

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.928	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	189	Type IV
Elong. Break %	40,000	300	1093	
Puncture Resistance (lbs)	40,000	57	118	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



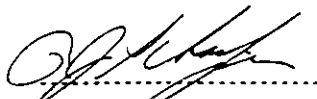
Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016371

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.928	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	194	Type IV
Elong. Break %	40,000	300	1127	
Puncture Resistance (lbs)	40,000	57	97	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	37	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager

JUL-20-1992 15:56 FROM UCC&P SEADRIFT, TX.

TO

GUNDLE TX

P.02/02

PRODUCT QUALITY REPORT

FAX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 20, 1992

PRODUCT NAME DFDG-1506 NT

BLEND NUMBER 235982
QUANTITY, LBS. 183,550
CONTAINER CCBX57691
CUSTOMER ORDER NO. S013048
UCC ORDER NO. 441621
SHIPPING DATE 07/18

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX GTM 0.27
MELT FLOW INDEX GTM 20.
DENSITY ASTM GCC 0.908

ANALYSIS NO. 110717



QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

JUL-07-1992 12:19 FROM UCC&P SEADRIFT, TX.

TO

917138756018

P.02/03

PRODUCT QUALITY REPORT

825-6010
Tx NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 7, 1992

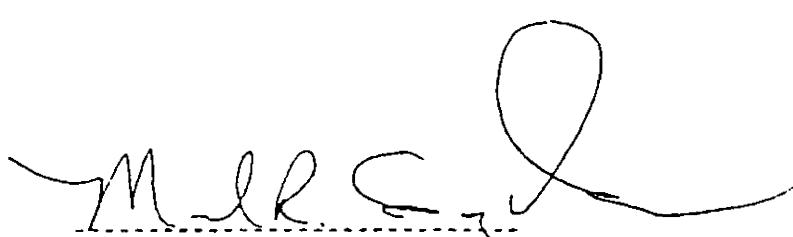
PRODUCT NAME	DFDB-1506 NT
BLEND NUMBER	235967
QUANTITY, LBS.	170,900
CONTAINER	CCBX55020
CUSTOMER ORDER NO.	S013048
UCC ORDER NO.	441302
SHIPPING DATE	07/06

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.26
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.909

ANALYSIS NO. 460624


QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

Gundle Lining Systems Inc



19103 Gundle Road
Houston, Texas 77073-3598
U.S.A.

Phone: (713) 443-8564
Toll Free: (800) 435-2008
Telex: 166657 GUNDLE HOU
FAX: (713) 875-6010

LETTER OF TRANSMITTAL

DATE August 3, 1992
M.R. NO. 7646-01
JOB NAME GEO CON INC./WELLSVILLE
PO FAX

GEO CON, INC.
4075 MONROEVILLE BOULEVARD
CORPORATE ONE, BUILDING II, STE. 400
MONROEVILLE PA 15146
ATTN: DAVE SANDSTROM

TRANSMITTED VIA: FEDERAL EXPRESS PRIORITY ONE
FEDERAL EXPRESS NO: 2043701026

GENTLEMEN: We are sending you:

XX_QC Documentation ___ Samples ___ Copy of letter ___ Original purchase order
___ Certification letter ___ Specifications ___ Submittals ___ Material warranty

No. of Copies	Description of items attached
5	QUALITY ASSURANCE CERTIFICATES
6	QUALITY CONTROL CERTIFICATES
2	UNION CARBIDE RESIN CERTIFICATE

THESE ARE TRANSMITTED AS NOTED BELOW:

___ For approval ___ Approved as noted ___ Resubmit ___ Copies for approval
XX_ For your use ___ Returned for corrections ___ Approval as Submitted
XX_ As requested ___ Return ___ For review and comment

GUNDLE LINING PACKING LIST: 25516

ROLL NUMBERS: SEE ATTACHED

APPROVAL

DATE

AUG 03 1992



Quality Control Certificate

RAILCAR : UTCX59608
MATERIAL : VLT060M000
BATCH # : 072792
ROLL # : 03016420

MANF. DATE : 07/27/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.27	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.921	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	208	Type IV
Elong. Break %	40,000	300	1140	
Puncture Resistance (lbs)	40,000	57	121	FIMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	38	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:

R.J. Schaefer
Quality Manager



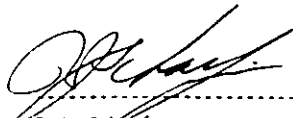
Quality Assurance Certificate

RAILCAR : UTCX59608
MATERIAL : VLT060M000
BATCH # : 072792
ROLL # : 03016421

MANF. DATE : 07/27/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.27	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.921	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	208	Type IV
Elong. Break %	40,000	300	1140	
Puncture Resistance (lbs)	40,000	57	121	FIMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	38	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072592
ROLL # : 03016394

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.27	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.922	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	209	Type IV
Elong. Break %	40,000	300	1146	
Puncture Resistance (lbs)	40,000	57	102	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaffer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072592
ROLL # : 03016395

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.28	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.922	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	209	Type IV
Elong. Break %	40,000	300	1146	
Puncture Resistance (lbs)	40,000	57	102	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:

R.J. Schaefer
Quality Manager



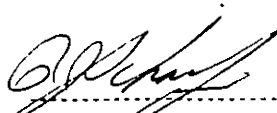
Quality Assurance Certificate

RAILCAR : CC8X57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016398

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.28	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.922	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	196	Type IV
Elong. Break %	40,000	300	1080	
Puncture Resistance (lbs)	40,000	57	95	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	38	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



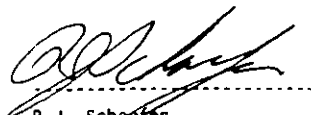
Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016400

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.6	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
I.S. Break (ppi)	40,000	70	203	Type IV
Elong. Break %	40,000	300	1169	
Puncture Resistance (lbs)	40,000	57	106	FIMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072592
ROLL # : 03016385

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.926	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	198	Type IV
Elong. Break %	40,000	300	1122	
Puncture Resistance (lbs)	40,000	57	83	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060H000
BATCH # : 072592
ROLL # : 03016388

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.6	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.28	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.922	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	200	Type IV
Elong. Break %	40,000	300	1131	
Puncture Resistance (lbs)	40,000	57	94	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	42	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager

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Quality Control Certificate

RAILCAR : CCBX57691
 MATERIAL : VLT060M000
 BATCH # : 072592
 ROLL # : 03016392

MANF. DATE : 07/25/1992
 PROJECT NAME : GEO CON, INC.
 MR NUMBER : 7646-01 PROJECT # : 7646-01
 LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.27	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.922	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	202	Type IV
Elong. Break %	40,000	300	1103	
Puncture Resistance (lbs)	40,000	57	100	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	39	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


 R.J. Schaefer
 Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072592
ROLL # : 03016393

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.27	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.922	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	202	Type IV
Elong. Break %	40,000	300	1103	
Puncture Resistance (lbs)	40,000	57	100	FIMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	39	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager

Gumille®

Quality Control Certificate

RAILCAR : CCBX57691
 MATERIAL : VLT060M000
 BATCH # : 072592
 ROLL # : 03016383

MANF. DATE : 07/25/1992
 PROJECT NAME : GEO CON, INC.
 MR NUMBER : 7646-01 PROJECT # : 7646-01
 LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.926	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	204	Type IV
Elong. Break %	40,000	300	1165	
Puncture Resistance (lbs)	40,000	57	105	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


 R.J. Schaefer
 Quality Manager

JUL-20-1992 15:55 FROM UCC&P SEADRIFT, TX.

TO

GUNDLE TX P.01/02

PRODUCT QUALITY REPORT

FAX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

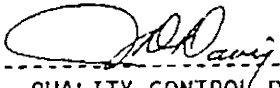
JULY 20, 1992

PRODUCT NAME	DFDG-1506 NT
BLEND NUMBER	235983
QUANTITY, LBS.	182,150
CONTAINER	UTCX59608
CUSTOMER ORDER NO.	S013048
UCC ORDER NO.	441622
SHIPPING DATE	07/20

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.26
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.908
ANALYSIS NO.		240718



QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

JUL-20-1992 15:56 FROM UCC&P SEADRIFT, TX.

TO

GUNDLE TX

P.02/02

PRODUCT QUALITY REPORT

FAX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 20, 1992

PRODUCT NAME	DFDG-1506 NT
BLEND NUMBER	235982
QUANTITY, LBS.	183,550
CONTAINER	CCBX57691
CUSTOMER ORDER NO.	S013048
UCC ORDER NO.	441621
SHIPPING DATE	07/18

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.27
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.908

ANALYSIS NO. 110717



QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

Gundle Lining Systems Inc



19103 Gundle Road
Houston, Texas 77073-3598
U.S.A.

Phone: (713) 443-8564
Toll Free: (800) 435-2008
Telex: 166657 GUNDLE HOU
FAX: (713) 875-6010

LETTER OF TRANSMITTAL

DATE August 3, 1992
M.R. NO. 7646-01
JOB NAME GEO CON INC./WELLSVILLE
PO FAX

GEO CON, INC.
4075 MONROEVILLE BOULEVARD
CORPORATE ONE, BUILDING II, STE. 400
MONROEVILLE PA 15146
ATTN: DAVE SANDSTROM

TRANSMITTED VIA: FEDERAL EXPRESS PRIORITY ONE
FEDERAL EXPRESS NO: 2043701026

GENTLEMEN: We are sending you:

XX_QC Documentation ___ Samples ___ Copy of letter ___ Original purchase order
___ Certification letter ___ Specifications ___ Submittals ___ Material warranty

No. of Copies	Description of items attached
5	QUALITY ASSURANCE CERTIFICATES
6	QUALITY CONTROL CERTIFICATES
2	UNION CARBIDE RESIN CERTIFICATE

THESE ARE TRANSMITTED AS NOTED BELOW:

___ For approval ___ Approved as noted ___ Resubmit ___ Copies for approval
XX_For your use ___ Returned for corrections ___ Approval as Submitted
XX_As requested ___ Return ___ For review and comment

GUNDLE LINING PACKING LIST: 25518

ROLL NUMBERS: SEE ATTACHED

APPROVAL

DATE

AUG 03 1992



Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072592
ROLL # : 03016381

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.926	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	205	Type IV
Elong. Break %	40,000	300	1152	
Puncture Resistance (lbs)	40,000	57	107	FIMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	39	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:

R.J. Schaefer
Quality Manager



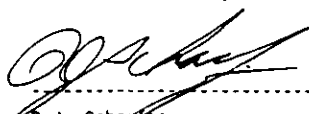
Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016380

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.926	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	195	Type IV
Elong. Break %	40,000	300	1093	
Puncture Resistance (lbs)	40,000	57	106	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	44	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



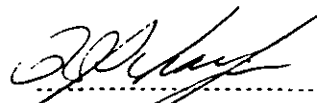
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016379

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	195	Type IV
Elong. Break %	40,000	300	1093	
Puncture Resistance (lbs)	40,000	57	106	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	44	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schacter
Quality Manager



Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016375

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	184	Type IV
Elong. Break %	40,000	300	1060	
Puncture Resistance (lbs)	40,000	57	90	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	44	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



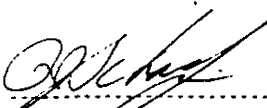
Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016367

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	2.0	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.17	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.949	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	186	Type IV
Elong. Break %	40,000	300	1090	
Puncture Resistance (lbs)	40,000	57	97	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072392
ROLL # : 03016363

MANF. DATE : 07/23/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	2.4	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	181	Type IV
Elong. Break %	40,000	300	1045	
Puncture Resistance (lbs)	40,000	57	95	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Control Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072392
ROLL # : 03016362

MANF. DATE : 07/23/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.4	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	181	Type IV
Elong. Break %	40,000	300	1045	
Puncture Resistance (lbs)	40,000	57	95	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:

R.J. Schaefer
Quality Manager



Quality Control Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072392
ROLL # : 03016360

MANF. DATE : 07/23/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.4	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.27	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	196	Type IV
Elong. Break %	40,000	300	1089	
Puncture Resistance (lbs)	40,000	57	124	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	42	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072292
ROLL # : 03016345

MANF. DATE : 07/22/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.3	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.25	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.921	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	198	Type IV
Elong. Break %	40,000	300	1141	
Puncture Resistance (lbs)	40,000	57	101	FIMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



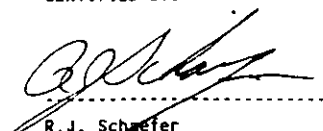
Quality Assurance Certificate

RAILCAR : CCBX55020
MATERIAL : VLT060M000
BATCH # : 072192
ROLL # : 03016331

MANF. DATE : 07/21/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.9	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	197	Type IV
Elong. Break %	40,000	300	1140	
Puncture Resistance (lbs)	40,000	57	117	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



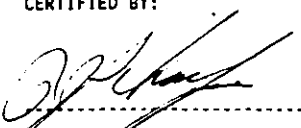
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016372

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.928	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	198	Type IV
Elong. Break %	40,000	300	1126	
Puncture Resistance (lbs)	40,000	57	113	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	42	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager

JUL-07-1992 12:19 FROM UCC&P SEADRIFT, TX.

TO

917136756010

P.02/23

PRODUCT QUALITY REPORT

875-6010
AX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 7, 1992

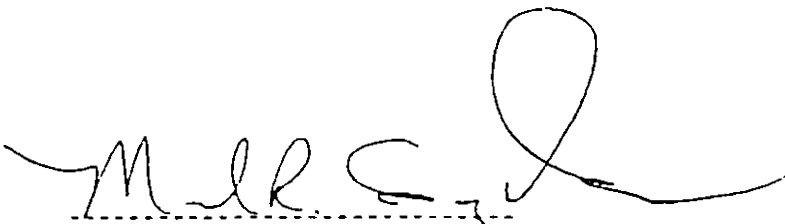
PRODUCT NAME	DFDB-1506 NT
BLEND NUMBER	235967
QUANTITY, LBS.	170,900
CONTAINER	CCBX55020
CUSTOMER ORDER NO.	S013048
UCC ORDER NO.	441302
SHIPPING DATE	07/06

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.26
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.909

ANALYSIS NO. 460624



QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

JUL-20-1992 15:56 FROM UCC&P SEADRIFT, TX.

TO

GUNDLE TX P.02/02

PRODUCT QUALITY REPORT

FAX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 20, 1992

PRODUCT NAME	DFDG-1506 NT
BLEND NUMBER	235982
QUANTITY, LBS.	183,550
CONTAINER	CCBX57691
CUSTOMER ORDER NO.	S013048
UCC ORDER NO.	441621
SHIPPING DATE	07/18

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.27
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.908

ANALYSIS NO. 110717



QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

Gundle Lining Systems Inc



19103 Gundle Road
Houston, Texas 77073-3598
U.S.A.

Phone: (713) 443-8564
Toll Free: (800) 435-2008
Telex: 166657 GUNDLE HOU
FAX: (713) 875-6010

LETTER OF TRANSMITTAL

DATE August 7, 1992
M.R. NO. 7646-01
JOB NAME GEO CON/WELLSVILLE
PO FAX

GEO CON, INC.
4075 MONROEVILLE BOULEVARD
CORPORATE ONE, BUILDING II, STE. 400
MONROEVILLE PA 15146
ATTN: DAVE SANDSTROM

TRANSMITTED VIA: FEDERAL EXPRESS STANDARD DELIVERY
FEDERAL EXPRESS NO: 6104613986

GENTLEMEN: We are sending you:

XX_QC Documentation ___ Samples ___ Copy of letter ___ Original purchase order
___ Certification letter ___ Specifications ___ Submittals ___ Material warranty

No. of Copies	Description of items attached
5	QUALITY ASSURANCE CERTIFICATES
6	QUALITY CONTROL CERTIFICATES
2	UNION CARBIDE RESIN CERTIFICATE

THESE ARE TRANSMITTED AS NOTED BELOW:

___ For approval ___ Approved as noted ___ Resubmit ___ Copies for approval
XX_ For your use ___ Returned for corrections ___ Approval as Submitted
XX_ As requested ___ Return ___ For review and comment

GUNDLE LINING PACKING LIST: 25531

ROLL NUMBERS: SEE ATTACHED

APPROVAL

DATE

Linda Jones
August 7, 1992



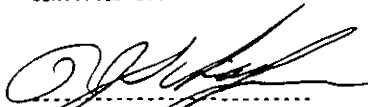
Quality Assurance Certificate

RAILCAR : UTCX59608
MATERIAL : VLTO60M000
BATCH # : 072792
ROLL # : 03016419

MANF. DATE : 07/27/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	68	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.27	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.921	D 1505 A
Tensile Properties:				
T.S. Break (psi)	40,000	70	204	Type IV
Elong. Break %	40,000	300	1117	
Puncture Resistance (lbs)	40,000	57	94	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



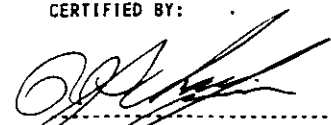
Quality Control Certificate

RAILCAR : UTCX59608
MATERIAL : VLTO60M000
BATCH # : 072792
ROLL # : 03016416

MANF. DATE : 07/27/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	68	D 1593
Carbon Black (%)	40,000	2.0 min	2.7	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	198	Type IV
Elong. Break %	40,000	300	1103	
Puncture Resistance (lbs)	40,000	57	94	FIMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	43	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



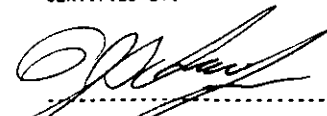
Quality Assurance Certificate

RAILCAR : UTCX59608
MATERIAL : VLT060M000
BATCH # : 072792
ROLL # : 03016415

MANF. DATE : 07/27/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	68	D 1593
Carbon Black (%)	40,000	2.0 min	2.7	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	207	Type IV
Elong. Break %	40,000	300	1129	
Puncture Resistance (lbs)	40,000	57	107	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	39	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



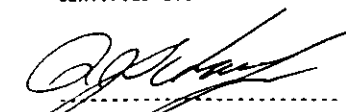
Quality Control Certificate

RAILCAR : UTCX59608
MATERIAL : VLT060M000
BATCH # : 072792
ROLL # : 03016414

MANF. DATE : 07/27/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.7	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	207	Type IV
Elong. Break %	40,000	300	1129	
Puncture Resistance (lbs)	40,000	57	107	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	39	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



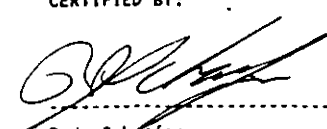
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016411

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.7	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (psi)	40,000	70	191	Type IV
Elong. Break %	40,000	300	1104	
Puncture Resistance (lbs)	40,000	57	116	FIMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	42	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016410

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.7	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	201	Type IV
Elong. Break %	40,000	300	1100	
Puncture Resistance (lbs)	40,000	57	104	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	44	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:

R.J. Schaefer
Quality Manager



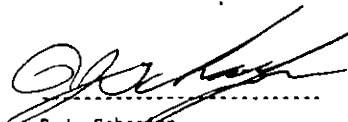
Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VL7060M000
BATCH # : 072692
ROLL # : 03016406

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.7	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	206	Type IV
Elong. Break %	40,000	300	1110	
Puncture Resistance (lbs)	40,000	57	107	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



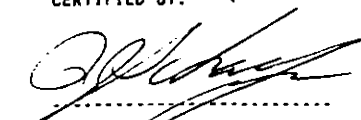
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016405

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.7	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	206	Type IV
Elong. Break %	40,000	300	1110	
Puncture Resistance (lbs)	40,000	57	107	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



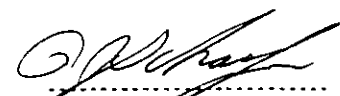
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016403

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	68	D 1593
Carbon Black (%)	40,000	2.0 min	2.7	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	207	Type IV
Elong. Break %	40,000	300	1151	
Puncture Resistance (lbs)	40,000	57	89	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	38	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



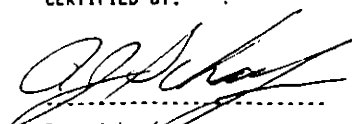
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016401

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.6	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (psi)	40,000	70	209	Type IV
Elong. Break %	40,000	300	1149	
Puncture Resistance (lbs)	40,000	57	102	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	39	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016402

MANF. DATE : 07/26/1992
PROJECT NAME : GEO COM, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.6	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	209	Type IV
Elong. Break %	40,000	300	1149	
Puncture Resistance (lbs)	40,000	57	102	FIMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	39	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager

JUL-20-1992 15:55 FROM UCC&P SEADRIFT, TX.

TO

GUNDLE TX

P.01/02

PRODUCT QUALITY REPORT

FAX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 20, 1992

PRODUCT NAME	DFDG-1506 NT
BLEND NUMBER	235983
QUANTITY, LBS.	182,150
CONTAINER	UTCX59608
CUSTOMER ORDER NO.	5013048
UCC ORDER NO.	441622
SHIPPING DATE	07/20

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.26
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.908

ANALYSIS NO. 240718



QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

JUL-20-1992 15:56 FROM UCC&P SEADRIFT, TX.

TO

GUNDLE TX

P.02/02

PRODUCT QUALITY REPORT

FAX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 20, 1992

PRODUCT NAME	DFDG-1506 NT
BLEND NUMBER	235982
QUANTITY, LBS.	183,550
CONTAINER	CCBX57691
CUSTOMER ORDER NO.	S013048
UCC ORDER NO.	441621
SHIPPING DATE	07/18

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.27
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.908

ANALYSIS NO. 110717



QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

Gundle Lining Systems Inc



19103 Gundle Road
Houston, Texas 77073-3598
U.S.A.

Phone: (713) 443-8564
Toll Free: (800) 435-2008
Telex: 166657 GUNDLE HOU
FAX: (713) 875-6010

LETTER OF TRANSMITTAL

DATE August 3, 1992
M.R. NO. 7646-01
JOB NAME GEO CON INC./WELLSVILLE
PO FAX

GEO CON, INC.
4075 MONROEVILLE BOULEVARD
CORPORATE ONE, BUILDING II, STE. 400
MONROEVILLE PA 15146
ATTN: DAVE SANDSTROM

TRANSMITTED VIA: FEDERAL EXPRESS PRIORITY ONE
FEDERAL EXPRESS NO: 2043701026

GENTLEMEN: We are sending you:

XX_QC Documentation ___ Samples ___ Copy of letter ___ Original purchase order
___ Certification letter ___ Specifications ___ Submittals ___ Material warranty

No. of Copies	Description of items attached
4	QUALITY ASSURANCE CERTIFICATES
4	QUALITY CONTROL CERTIFICATES
3	UNION CARBIDE RESIN CERTIFICATE

THESE ARE TRANSMITTED AS NOTED BELOW:

___ For approval ___ Approved as noted ___ Resubmit ___ Copies for approval
XX_ For your use ___ Returned for corrections ___ Approval as Submitted
XX_ As requested ___ Return ___ For review and comment

GUNDLE LINING PACKING LIST: 25535

ROLL NUMBERS: SEE ATTACHED

APPROVAL

DATE

AUG 03 1992



Quality Control Certificate

RAILCAR : UTCX59608
MATERIAL : VLT060M000
BATCH # : 072792
ROLL # : 03016418

MANF. DATE : 07/27/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.27	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.921	D 1505 A
Tensile Properties:				
T.S. Break (psi)	40,000	70	204	Type IV
Elong. Break %	40,000	300	1117	
Puncture Resistance (lbs)	40,000	57	94	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : UTCX59608
MATERIAL : VLT060M000
BATCH # : 072792
ROLL # : 03016417

MANF. DATE : 07/27/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.7	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	198	Type IV
Elong. Break %	40,000	300	1103	
Puncture Resistance (lbs)	40,000	57	94	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	43	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016407

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.6	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.27	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	194	Type IV
Elong. Break %	40,000	300	1081	
Puncture Resistance (lbs)	40,000	57	101	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	45	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016408

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.6	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.27	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	194	Type IV
Elong. Break %	40,000	300	1081	
Puncture Resistance (lbs)	40,000	57	101	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	45	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



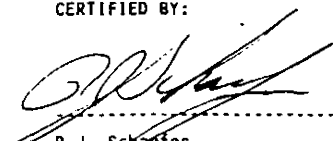
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016409

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.6	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.27	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (psi)	40,000	70	201	Type IV
Elong. Break %	40,000	300	1100	
Puncture Resistance (lbs)	40,000	57	104	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	44	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



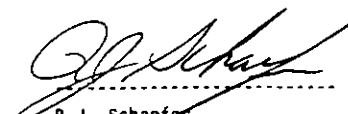
Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016404

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.7	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (psi)	40,000	70	207	Type IV
Elong. Break %	40,000	300	1151	
Puncture Resistance (lbs)	40,000	57	89	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	38	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CC8X55020
MATERIAL : VLT060M000
BATCH # : 072292
ROLL # : 03016336

MANF. DATE : 07/22/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	3.0	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.24	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	187	Type IV
Elong. Break %	40,000	300	1121	
Puncture Resistance (lbs)	40,000	57	106	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	33	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Control Certificate

RAILCAR : CC8X55020
MATERIAL : VL1060M000
BATCH # : 072292
ROLL # : 03016335

MANF. DATE : 07/22/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	3.0	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.24	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.924	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	187	Type IV
Elong. Break %	40,000	300	1121	
Puncture Resistance (lbs)	40,000	57	106	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	33	D 1004, Die C
Low Temp. Brittleness deg F	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager

JUL-20-1992 15:55 FROM UCC&P SEADRIFT, TX.

TO

GUNDLE TX P.01/02

PRODUCT QUALITY REPORT

FAX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 20, 1992

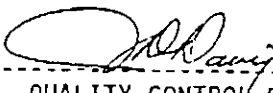
PRODUCT NAME	DFDG-1506 NT
BLEND NUMBER	235983
QUANTITY, LBS.	182,150
CONTAINER	UTCX59608
CUSTOMER ORDER NO.	S013048
UCC ORDER NO.	441622
SHIPPING DATE	07/20

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.26
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.908

ANALYSIS NO. 240718



QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

JUL-07-1992 12:19 FROM UCC&P SEADRIFT, TX.

TO

917138756010

P.02/03

PRODUCT QUALITY REPORT

825-6010
X NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 7, 1992

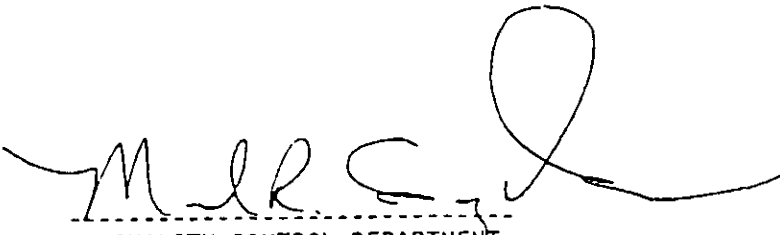
PRODUCT NAME	DFDB-1506 NT
BLEND NUMBER	235967
QUANTITY, LBS.	170,900
CONTAINER	CCBX55020
CUSTOMER ORDER NO.	S013048
UCC ORDER NO.	441302
SHIPPING DATE	07/06

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.26
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.909

ANALYSIS NO. 460624


QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

JUL-20-1992 15:56 FROM UCC&P SEADRIFT, TX.

TO

GUNDLE TX P.02/02

PRODUCT QUALITY REPORT

FAX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 20, 1992

PRODUCT NAME	DFDG-1506 NT
BLEND NUMBER	235982
QUANTITY, LBS.	183,550
CONTAINER	CCBX57691
CUSTOMER ORDER NO.	S013048
UCC ORDER NO.	441621
SHIPPING DATE	07/18

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.27
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.908

ANALYSIS NO. 110717



QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

Gundle Lining Systems Inc



19103 Gundle Road
Houston, Texas 77073-3598
U.S.A.

Phone: (713) 443-8584
Toll Free: (800) 435-2008
Telex: 166657 GUNDLE HOU
FAX: (713) 875-6010

LETTER OF TRANSMITTAL

DATE August 3, 1992
M.R. NO. 7545-01
JOB NAME GEO CON INC./WELLSVILLE
PO FAX

GEO CON, INC.
4075 MONROEVILLE BOULEVARD
CORPORATE ONE, BUILDING II, STE. 400
MONROEVILLE PA 15146
ATTN: DAVE SANDSTROM

TRANSMITTED VIA: FEDERAL EXPRESS PRIORITY ONE
FEDERAL EXPRESS NO: 2043701026

GENTLEMEN: We are sending you:

XX_QC Documentation ___ Samples ___ Copy of letter ___ Original purchase order
___ Certification letter ___ Specifications ___ Submittals ___ Material warranty

No. of Copies	Description of items attached
4	QUALITY ASSURANCE CERTIFICATES
7	QUALITY CONTROL CERTIFICATES
1	UNION CARBIDE RESIN CERTIFICATE

THESE ARE TRANSMITTED AS NOTED BELOW:

___ For approval ___ Approved as noted ___ Resubmit ___ Copies for approval
XX_ For your use ___ Returned for corrections ___ Approval as Submitted:
XX_ As requested ___ Return ___ For review and comment

GUNDLE LINING PACKING LIST: 25517

ROLL NUMBERS: SEE ATTACHED

APPROVAL

DATE

AUG 03 1992



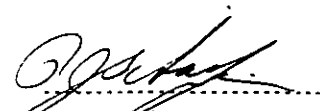
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072692
ROLL # : 03016399

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.6	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	203	Type IV
Elong. Break %	40,000	300	1169	
Puncture Resistance (lbs)	40,000	57	106	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



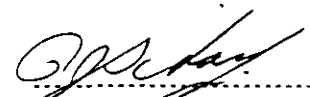
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072592
ROLL # : 03016396

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.28	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.922	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	206	Type IV
Elong. Break %	40,000	300	1118	
Puncture Resistance (lbs)	40,000	57	80	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	44	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


K.J. Schaefer
Quality Manager



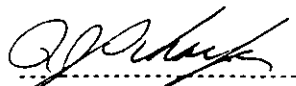
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VL7060M000
BATCH # : 072692
ROLL # : 03016397

MANF. DATE : 07/26/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.28	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.922	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	196	Type IV
Elong. Break %	40,000	300	1080	
Puncture Resistance (lbs)	40,000	57	95	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	38	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072592
ROLL # : 03016387

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	68	D 1593
Carbon Black (%)	40,000	2.0 min	2.6	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.28	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.922	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	200	Type IV
Elong. Break %	40,000	300	1152	
Puncture Resistance (lbs)	40,000	57	113	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	37	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072592
ROLL # : 03016386

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	68	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.926	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	198	Type IV
Elong. Break %	40,000	300	1122	
Puncture Resistance (lbs)	40,000	57	83	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degf	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072592
ROLL # : 03016384

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	67	D 1593
Carbon Black (%)	40,000	2.0 min	2.5	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.926	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	204	Type IV
Elong. Break %	40,000	300	1165	
Puncture Resistance (lbs)	40,000	57	105	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	40	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:

R.J. Schaefer
Quality Manager



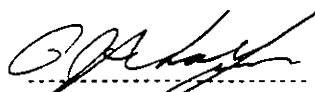
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016370

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.1	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.17	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.949	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	194	Type IV
Elong. Break %	40,000	300	1127	
Puncture Resistance (lbs)	40,000	57	97	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	37	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016369

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	2.1	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.17	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.949	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	183	Type IV
Elong. Break %	40,000	300	1077	
Puncture Resistance (lbs)	40,000	57	98	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



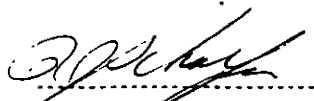
Quality Control Certificate

RAILCAR : CC8X57691
MATERIAL : VLT060M000
BATCH # : 072492
ROLL # : 03016368

MANF. DATE : 07/24/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	64	D 1593
Carbon Black (%)	40,000	2.0 min	2.1	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.17	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.949	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	183	Type IV
Elong. Break %	40,000	300	1077	
Puncture Resistance (lbs)	40,000	57	98	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072392
ROLL # : 03016365

MANF. DATE : 07/23/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (%)	40,000	2.0 min	2.0	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.17	D 1238 E
Density (g/cm ³)	40,000	0.900 min	0.949	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	184	Type IV
Elong. Break %	40,000	300	1061	
Puncture Resistance (lbs)	40,000	57	108	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager



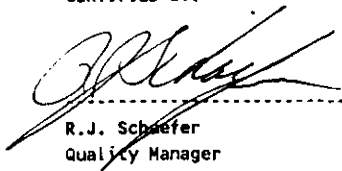
Quality Control Certificate

RAILCAR : CCBX57691
MATERIAL : VLT060M000
BATCH # : 072392
ROLL # : 03016364

MANF. DATE : 07/23/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-01 PROJECT # : 7646-01
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (%)	40,000	2.0 min	2.0	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.17	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.949	D 1505 A
Tensile Properties:				
T.S. Break (ppi)	40,000	70	184	Type IV
Elong. Break %	40,000	300	1061	
Puncture Resistance (lbs)	40,000	57	108	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	41	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:


R.J. Schaefer
Quality Manager

JUL-20-1992 15:56 FROM UCC&P SEADRIFT, TX.

TO

GUNDLE TX

P.02/02

PRODUCT QUALITY REPORT

FAX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 20, 1992

PRODUCT NAME DFDG-1506 NT

BLEND NUMBER 235982
QUANTITY, LBS. 183,550
CONTAINER CCBX57691
CUSTOMER ORDER NO. S013048
UCC ORDER NO. 441621
SHIPPING DATE 07/18

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.27
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.908

ANALYSIS NO. 110717



QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY



GEO SYNTec CONSULTANTS

ARCO

SUBMITTAL COVER SHEET

1992 year

PROJECT: CELA CAP

PROJECT NO.: GQ3201

TASK NO.: 0203

LOCATION: WELLSVILLE, NEW YORK

CONTRACTOR: GEO-CON, INC. (C91028-003-01)

SUBMITTAL NO.: 28 DC 4

REVISION NO.: Add 26

SUBMITTAL TITLE: *Certificates of Compliance, 60 mil VLDPE textured geomembrane*

DATE RECEIVED: *12/DEC/92*
(day/ month/ yr)

DATE REVIEWED: *19/DEC/92*
(day/ month/ yr)

RESUBMITTAL REQUIRED:

☐ YES

☒ NO

DATE APPROVED: *19/DEC/92*
(day/ month/ yr)

COMMENTS: *Additional RUS sent to site*

DISTRIBUTION:

BY: *[Signature]*
GEO SYNTec CONSULTANTS

BY: *[Signature]*
ARCO

SUBMITTAL 28QC04
ADDENDUM NO. 26
CONTRACT NO. C91028-003-01
60 MIL VLDPE TEXTURED GEOMEMBRANE
CERTIFICATES OF COMPLIANCE
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

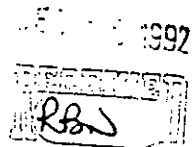
Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700





19103 Gundle Road
Houston, Texas 77073 3598
U.S.A.

Phone: (713) 443-8584
Toll Free: (800) 435-2008
Telex: 186857 GUNDLE HOU
FAX: (713) 875-6010

LETTER OF TRANSMITTAL

DATE December 10, 1992
M.R. NO. 7648-03
JOB NAME GEO CON INC.
PO 23041

GEO CON, INC.
4075 MONROEVILLE BOULEVARD
CORPORATE ONE, BUILDING II, STE. 400
MONROEVILLE PA 15146
ATTN: DAVE GANDSTROM

TRANSMITTED VIA REGULAR MAIL
SHIPMENT TRACKING NO.

GENTLEMEN: We are sending you:

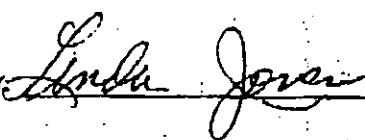
No. of Copies	Description of Items attached
1	QUALITY ASSURANCE CERTIFICATES
1	QUALITY CONTROL CERTIFICATES
1	UNION CARBIDE RESIN CERTIFICATE

THESE ARE TRANSMITTED AS NOTED BELOW:

☐ For approval ☐ Approved as noted ☐ Resubmit ☐ Copies for approval
☒ For your use ☐ Returned for corrections ☐ Approval as Submitted
☒ As requested ☐ Return ☐ For review and comment

GUNDLE LINING PACKING LIST: 18323

ROLL NUMBERS: 03016353, 03016354

SUBMITTED BY: 



Quality Control Certificate

PALICAR : CCRX55020
MATERIAL : VITANAMMON
BATCH # : 072392
ROLL # : 03016353

MANF. DATE : 07/25/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-03 PROJECT # : 7646-03
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	66	D 1593
Carbon Black (X)	40,000	2.0 min	2.2	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (psi)	40,000	70	194	Type IV
Elong. Break %	40,000	300	1133	
Puncture Resistance (lbs)	40,000	57	84	FTMS 101, Method 2065
Tear Resistance (lbs)	40,000	24	37	D 1004, Dia C
Low Temp. Brittleness degf	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance-Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Pending	D 1204 (212F, 1 hour)

CERTIFIED BY:

R.J. Schaefer
Quality Manager



Quality Assurance Certificate

RAILCAR : 000X55020
MATERIAL : VLT060H000
BATCH # : 072192
ROLL # : 03016354

MANF. DATE : 07/23/1992
PROJECT NAME : GEO CON, INC.
MR NUMBER : 7646-03 PROJECT # : 7646-03
LOCATION : MONROEVILLE PA 001

TEST PARAMETER	TESTING FREQUENCY	TYPICAL SPECIFICATIONS	TEST RESULTS	ASTM METHOD
Average Thickness (mils)	EVERY ROLL	60 min	65	D 1593
Carbon Black (X)	40,000	2.0 min	2.2	D 1603
Melt Index (g/10 min)	40,000	1.10 max	0.26	D 1238 E
Density (g/cm3)	40,000	0.900 min	0.923	D 1505 A
Tensile Properties:				
T.S. Break (psi)	40,000	70	194	Type IV
Elong. Break %	40,000	300	1133	
Puncture Resistance (lbs)	40,000	57	84	FTM9 101, Method 2065
Tear Resistance (lbs)	40,000	24	37	D 1004, Die C
Low Temp. Brittleness degF	CERTIFIED	-112 max		D 746
Environ. Stress Crack hrs	CERTIFIED	1500 min		D 1693
Resistance Soil Burial %	CERTIFIED	-10 to 10		ASTM D3083
Dimensional Stability	40,000	-2 to 2	Permeating	D 1204 (212F, 1 hour)

CERTIFIED BY:

R.J. Schaefer
Quality Manager

12 10 02 12302 0713 313 0010

GUNDLE LINING

0003

JUL-07-1992 12:19 FROM UCC&P SEADRIFT, TX.

TO

917138756010

P.02/03

PRODUCT QUALITY REPORT

825-6010

TX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

JULY 7, 1992

PRODUCT NAME DFDB-1506 NT

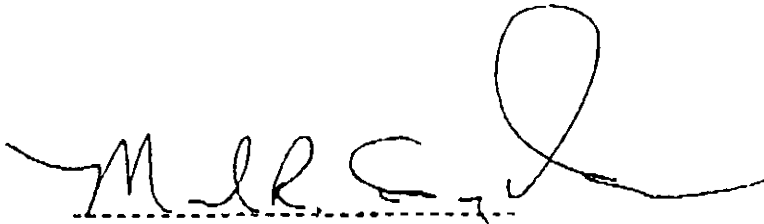
BLEND NUMBER 235967
QUANTITY, LBS. 170,900
CONTAINER CC8X55020
CUSTOMER ORDER NO. S013048
UCC ORDER NO. 441302
SHIPPING DATE 07/06

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX GTM 0.26
MELT FLOW INDEX GTM 20.
DENSITY ASTM GCC 0.909

ANALYSIS NO. 460624


QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

**VLDPE WELDING ROD
CERTIFICATES OF COMPLIANCE**

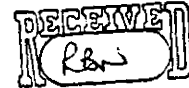
P1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 11
CONTRACT NO. C91028-003-01
VLDPE WELDING ROD CERTIFICATES OF COMPLIANCE
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor



Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700



Quality Control Certificate

RAILCAR : CCBX58063
MATERIAL : WELDING ROD
BATCH # : 120991

MANF. DATE : 12/09/1991
PROJECT NAME : GEO CON-WELLSVILLE NY
PROJECT NUMBER : 7646-01 JOB # 7646-01
LOCATION : WELLSVILLE, NY

TEST PARAMETERS -----	TYPICAL SPECIFICATION -----	TEST RESULTS -----	ASTM TEST METHOD -----
Carbon Black (%)	2.0 - 3.0	2.4	D 1603
Density (g/cm ³)	.900	.923	D 1505 A
Melt Index (g/10 min)	1.1 max	.26	D 1238 E

CERTIFIED BY:

R. J. Schaefer
Quality Manager

NOV-14-1991 12:52 FROM UCC&M SEADRIFT, TX.

GUNBLE TX 77979

PRODUCT QUALITY REPORT

BOX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAVACA, TEXAS 77979

NOVEMBER 14, 1991

PRODUCT NAME	OFDA-1506 NT
BLEND NUMBER	235706
QUANTITY, LBS.	183,850
CONTAINER	CC8X58063
CUSTOMER ORDER NO.	134115
UCC ORDER NO.	462751
SHIPPING DATE	11/14

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.22
DENSITY	GCC	0.909
ANALYSIS NO.		310927


.....
QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY



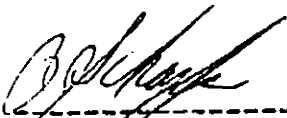
Quality Control Certificate

RAILCAR : UTCX59487
MATERIAL : WELDING ROD
BATCH # : 070292

MANF. DATE : 07/02/1992
PROJECT NAME : GEO CON
PROJECT NUMBER : 7646-01 JOB # 7646-01
LOCATION : MONROEVILLE, PA
Wellsville NY

TEST PARAMETERS	TYPICAL SPECIFICATION	TEST RESULTS	ASTM TEST MEHTOD
Carbon Black (%)	2.0 - 3.0	2.3	D 1603
Density (g/cm3)	.900	.922	D 1505 A
Melt Index (g/10 min)	1.1 max	.22	D 1238 E

CERTIFIED BY:


R. J. Schaefer
Quality Manager

JUN-23-1992 15:53 FROM UCC&P SEADRIFT, TX.

TO

917:22386787

P.21/01

PRODUCT QUALITY REPORT

FAX NO. 713-230-6787
GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX 77073
ATTN: STEVE SEVERSON

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.
POLYOLEFINS DIVISION
P.O. BOX 186
PORT LAYACA, TEXAS 77979

JUNE 23, 1992

PRODUCT NAME	DFDB-1506 NT
BLEND NUMBER	235965
QUANTITY, LBS.	182,600
CONTAINER	UTCX59487
CUSTOMER ORDER NO.	011189
UCC ORDER NO.	176346
SHIPPING DATE	06/23

SHIPPED TO: GUNDLE LINING SYSTEMS INC.
WESTFIELD, TX

THE FOLLOWING TEST DATA WAS OBTAINED:

MELT INDEX	GTM	0.27
MELT FLOW INDEX	GTM	20.
DENSITY ASTM	GCC	0.909

ANALYSIS NO. 200622


QUALITY CONTROL DEPARTMENT
SEADRIFT PLANT LABORATORY

**GEOCOMPOSITE DRAINAGE LAYER
CERTIFICATES OF COMPLIANCE**



GEOSYNTEC CONSULTANTS

ARCO

SUBMITTAL COVER SHEET

1992 year

PROJECT: CELA CAP

PROJECT NO.: GQ3201

TASK NO.: 03

LOCATION: WELLSVILLE, NEW YORK

CONTRACTOR: GEO-CON, INC. (C91028-003-01)

SUBMITTAL NO.: 25 GC 4

REVISION NO. AND NO. 20.

SUBMITTAL TITLE: *Criteria of Compliance & Proposed Protection Procedure - Geosynthetic Driveway Layer*

DATE RECEIVED: 31 OCT 92
(day/month/yr)

DATE REVIEWED: 31 OCT 92
(day/month/yr)

RESUBMITTAL REQUIRED:

☐ YES

☒ NO

DATE APPROVED: 5 NOV 92
(day/month/yr)

COMMENTS: *Proposed method of construction was changed from 2'0" overlap to 6 in. overlap using:*

- ties at 3 to 5 ft. centers to the geocell components; and*
- a seam seam for the geotextile. (Single J seam approved & double J seam accepted as alternative).*

The above were discussed & approved by EPA. Listing of the geotextile has not been approved. Therefore, proposed method of construction is unacceptable.

DISTRIBUTION:

BY:

BY:
ARCO

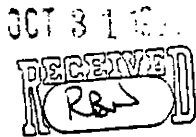
P1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 20
CONTRACT NO. C91028-003-01
GEOSYNTHETIC DRAINAGE LINER CERTIFICATES OF COMPLIANCE
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor



Prepared By:

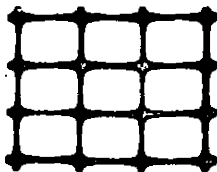
GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

Certificates of Compliance

Attached are the certificates of compliance for the geosynthetic drainage liner which will be installed at the Sinclair Refinery site in Wellsville, New York.

Installation of Geosynthetic Drainage Liner

Geo-Con proposes to install the geocomposite by overlapping the geonet portion of adjacent panels approximately 4 to 6 inches and joining them with plastic ties spaced on 5 foot centers. Butt seams will be overlapped two feet with plastic ties spaced on 1 - foot centers. Following this, the 12 inches of unbonded geotextile which runs lengthwise on each roll of geocomposite will be overlapped and leistered to the 12" of unbonded geotextile on the adjacent roll of geocomposite. (Butt seams will not be leistered.) Stitching of the geotextile is unnecessary as the geonet and not the geotextile is the load carrying component of the geocomposite. (In the event of a failure, the tensile strength of the geonet is approximately 2 to 3 times that of the geotextile.) In addition, the combination of leistering the geotextile and the 12 inches of overlap will provide the protection required to prevent migration of fines into the drainage portion of the composite.



Tensar

SEPTEMBER 21, 1992

RECEIVED
SEP 28 1992
GEO-CON, INC.

The Tensar Corporation

10000 Old York Road
Charlotte, NC 28213
(704) 541-1000

GEO-CON, INC.
4075 MONROEVILLE BLVD

MONROEVILLE, PA 15146

REFERENCE: TENSAR ORDER NUMBER: 009981
PURCHASE ORDER NUMBER: 19604
BILL OF LADING NUMBER: 129004

SOLD TO: GEO-CON, INC.
4075 MONROEVILLE BLVD
CORP 1, BLDG 11, SUITE 400

MONROEVILLE, PA 15146

SHIP TO: GEO-CON, INC.
4440 LEBANON ROAD, SUITE 100

VERMILION, IL 61159

This is to certify that TENSAR W410005 geocomposite as manufactured by The Tensar Corporation, meets the characteristics and properties per the attached specification sheet. Actual lot number(s) shipped of the core material, below, are as indicated:

<u>LOT</u> <u>NUMBER</u>	<u>NO.</u> <u>ROLLS</u>	<u>THICKNESS</u> (mm)	<u>TENSILE</u> <u>STRENGTH</u> (lb. ft.)	<u>W.C.</u>
920908	42	5.25	673.5	2.75
920914	4	5.41	640.2	2.60
920915	89	5.30	603.2	2.40
920915	89	5.31	630.6	2.60
920915	89	5.30	664.6	2.40
920917	9	5.45	653.4	2.70

Sincerely,

W. S. Shelton
Director of Production Technology

DRAINAGE NET NS1405 (NDPE)

The drainage net shall be an integrally formed polyethylene net structure. It shall have uniform channels, open area and thickness to assure uniform flow throughout the structure. It shall have high tensile strength and tear strength to resist installation damage and loading on steep slopes. It shall also have a low compressibility under high loadings to maintain a high transmissivity under a range of loading conditions. The drainage net shall also be resistant to ultraviolet degradation. The drainage net shall conform to the property requirements listed below.

PROPERTY	TEST METHOD	NOTES	UNITS	VALUE
<u>Flow Capacity</u>				
Gradient of 1				
Transmissivity @ 500 psf	ASTM 4716		$\times 10^{-5} \text{ ft}^2/\text{sec}$ (gpm/ft)	21 (9.55)
Transmissivity @ 10,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	16 (7.24)
@ 20,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	8.6 (3.86)
<u>Mechanical Properties</u>				
Porosity				.81-.84
Peak Tensile Strength MD/TD	ASTM D638 Modified	2,5	lbs/foot	600/336
Melt Index	D-1238		g/10 min	.15-.30
Elongation to Break MD/TD			%	543/350
<u>Material</u>				
Polyethylene-Specific Gravity	ASTM D1505		g/cm ³	0.94
Carbon Black Stabilization	ASTM D4218		%	2.5
<u>Dimensions</u>				
Thickness	O.D. Calipered	2,6,7	inches	0.20
Unit Weight			oz/yd ²	29
Open Area	COE Method Modified		%	58
Roll Length			ft	98
Roll Width			ft	6.3
Roll Weight			lbs	118

Notes

1. Except where noted all reported test values are nominal.
2. Minimum Value.
3. Compression tests are performed on a 2-inch square sample loaded at a 1mm/minute constant rate of strain.
4. Maximum Value.
5. Tensile Strength and Compressibility properties shall be tested by the manufacturer every 10,000 square yards of products.
6. Thickness is measured by placing the specimen flat on a comparator base and lowering a round 1/2 inch diameter flat end contact surface squarely over a junction.
7. Product thickness shall be measured by the manufacturer every 2,500 square yards of product.
8. No foaming agents were used to manufacture the Drainage Net

The Tensar Corporation
1210 Citizens Parkway
Morrow, GA 30260
(800) 845-4453

SPECIFICATION SHEET
NS1405 H-S
March 12, 1992



Werkstoff

Polyfelt

September 21, 1992

Ann Shockley
Tensar
1210 Citizens Parkway
Morrow, GA 30260

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
RE: Polyfelt Job #787 Order #6939

Dear Ms. Shockley
This letter certifies that POLYFELT TS700, shipped FOB
Evergreen, Alabama, on 9/18/92, includes rolls from Lot #
20139, manufactured by Polyfelt, Inc.

PROPERTY	TEST PROCEDURE	ACTUAL RESULTS ⁽¹⁾
Weight	ASTM D 3776	8.9 oz/yd ²
Thickness	ASTM D 5199	125* Mil
Grab Strength	ASTM D 4632	232 lbs
Grab Elongation	ASTM D 4632	71 %
Tear Strength	ASTM D 4533	99 lbs
Mullen Burst	ASTM D 3786	392 psi
Puncture Resistance	ASTM D 4833	129 lbs
A.O.S.	ASTM D 4751	.180* mm (80) US Sieve
Permittivity	ASTM D 4491	1.5* sec ⁻¹
Water Permeability	ASTM D 4491	0.48* cm/sec
Water Flow Rate	ASTM D 4491	117* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

- (1) Values in weaker principle direction. All values represent actual typical roll values, tested in accordance with ASTM D 4759-88.
- * At time of manufacturing; handling may change these property values.
- (2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

Polyfelt, Inc.

P.O. Box 727
200 Miller T. Sellers Drive
Evergreen, Alabama 36401

9	920917	03	A B C D E F G H I
5	920915	09	A B C D E
10	920915	09	A B C D E F G H I J
4	920908	01	A B I J
10	920915	05	A B C D E F G H I J
10	920915	01	A B C D E F G H I J
10	920908	03	A B C D E F G H I J
9	920915	02	A B C D E F G H I
10	920915	06	A B C D E F G H I J
10	920915	07	A B C D E F G H I J
10	920908	05	A B C D E F G H I J
	920915	10	F G H I J
4	920914	06	G H I J
10	920908	07	A B C D E F G H I J
3	920908	02	H I J
10	920915	04	A B C D E F G H I J
10	920915	08	A B C D E F G H I J
5	920908	04	A B C D E

144 Total

Lot #	920908	920914	920915	920917
of rolls	42	4	89	9



Tensar

SEPTEMBER 22, 1992

RECEIVED
SEP 28 1992
GEO-CON, INC.

The Tensar Corporation

10000 Tensar Drive
P.O. Box 10000
Charlotte, NC 28210

GEO-CON INC
4075 MONROEVILLE BLVD

MONROEVILLE, PA 15146

REFERENCE: TENSAR ORDER NUMBER: 009981
PURCHASE ORDER NUMBER: 19604
BILL OF LADING NUMBER: 129356

SOLD TO: GEO-CON INC
4075 MONROEVILLE BLVD
CORP 1, BLDG 11, SUITE 400

MONROEVILLE, PA 15146

SHIP TO: GEO-CON INC
4440 LEXINGTON FARM ROAD

WELLSVILLE, PA 16806

This is to certify that TENSAR D410595 geocomposite as manufactured by the TENSAR Corporation, meets the characteristics and properties per the attached specification sheet. Actual lot number(s) shipped of the core material, indicated are as indicated:

<u>LOT</u> <u>NUMBER</u>	<u>NO.</u> <u>ROLLS</u>	<u>THICKNESS</u> (mm)	<u>TENSILE</u> <u>STRENGTH</u> (lb/ft)	<u>W.T.</u>
920908	61	5.35	633.6	1.10
920914	42	5.41	640.2	1.10
920915	6	5.30	603.2	1.10
920915	6	5.31	630.6	1.10
920915	6	5.30	604.6	1.10
920917	10	5.45	633.4	1.10
920918	30	5.46	643.6	1.10

Sincerely,

W. S. Shelton
Director of Production Technology

DRAINAGE NET NS1405 (MDPE)

The drainage net shall be an integrally formed polyethylene net structure. It shall have uniform channels, open area and thickness to assure uniform flow throughout the structure. It shall have high tensile strength and tear strength to resist installation damage and loading on steep slopes. It shall also have a low compressibility under high loadings to maintain a high transmissivity under a range of loading conditions. The drainage net shall also be resistant to ultraviolet degradation. The drainage net shall conform to the property requirements listed below.

PROPERTY	TEST METHOD	NOTES	UNITS	VALUE
<u>Flow Capacity</u>				
Gradient of 1				
Transmissivity @ 500 psf	ASTM 4716		$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	21 (9.55)
Transmissivity @ 10,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	16 (7.24)
@ 20,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	8.6 (3.86)
<u>Mechanical Properties</u>				
Porosity				.81-.84
Peak Tensile Strength MD/TD	ASTM D638 Modified	2.5	lbs/foot	600/336
Melt Index	D-1238		g/10 min	.15-.30
Elongation to Break MD/TD			%	540/550
<u>Material</u>				
Polyethylene-Specific Gravity	ASTM D1505		g/cm ³	0.94
Carbon Black Stabilization	ASTM D4218		%	2.5
<u>Dimensions</u>				
Thickness	O.D. Calipered	2,6,7	inches	0.20
Unit Weight			oz/yd ²	29
Open Area	CDE Method Modified		%	58
Roll Length			ft	98
Roll Width			ft	6.3
Roll Weight			lbs	118

Notes

1. Except where noted all reported test values are nominal.
2. Minimum Value.
3. Compression tests are performed on a 2-inch square sample loaded at a 1mm/minute constant rate of strain.
4. Maximum Value.
5. Tensile Strength and Compressibility properties shall be tested by the manufacturer every 10,000 square yards of products.
6. Thickness is measured by placing the specimen flat on a comparator base and lowering a round 1/2 inch diameter flat end contact surface squarely over a junction.
7. Product thickness shall be measured by the manufacturer every 2,500 square yards of product.
8. No foaming agents were used to manufacture the Drainage Net

The Tensar Corporation
1210 Citizens Parkway
Morrow, GA 30260
(800) 845-4453

SPECIFICATION SHEET
NS1405 H-S
March 12, 1992



Werkstoff

Polyfelt

September 21, 1992

Ann Shockley
Tensar
1210 Citizens Parkway
Morrow, GA 30260

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
RE: Polyfelt Job #787 Order #6939

Dear Ms. Shockley

This letter certifies that POLYFELT TS700, shipped FOB
Evergreen, Alabama, on 9/18/92, includes rolls from Lot #
20139, manufactured by Polyfelt, Inc.

<u>PROPERTY</u>	<u>TEST PROCEDURE</u>	<u>ACTUAL RESULTS</u> (1)
Weight	ASTM D 3776	8.9 oz/yd ²
Thickness	ASTM D 5199	125* Mil
Grab Strength	ASTM D 4632	232 lbs
Grab Elongation	ASTM D 4632	71 %
Tear Strength	ASTM D 4533	99 lbs
Mullen Burst	ASTM D 3786	392 psi
Puncture Resistance	ASTM D 4833	129 lbs
A.O.S.	ASTM D 4751	.180* mm (80) US Sieve
Permittivity	ASTM D 4491	1.5* sec ⁻¹
Water Permeability	ASTM D 4491	0.48* cm/sec
Water Flow Rate	ASTM D 4491	117* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

- (1) Values in weaker principle direction. All values represent actual typical roll values, tested in accordance with ASTM D 4759-88.
- * At time of manufacturing; handling may change these property values.
- (2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

Polyfelt, Inc.

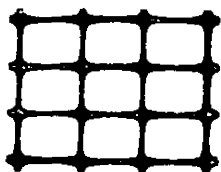
P.O. Box 727
200 Miller T. Sellers Drive
Evergreen, Alabama 36401

B/L no. 129356

G20 - con Inc

Q ,	Lot #	Roll #	
5	920914	09	A, B, C, D, E
10	920908	10	A, B, C, D, E, F, G, H, I, J
10	920908	11	A, B, C, D, E, F, G, H, I, J
10	920908	06	A, B, C, D, E, F, G, H, I, J
10	920908	08	A, B, C, D, E, F, G, H, I, J
10	920917	02	A, B, C, D, E, F, G, H, I, J
10	920908	09	A, B, C, D, E, F, G, H, I, J
5	920914	08	A, B, C, D, E
6	920908	02	B, C, D, E, F, G
6	920914	06	A, B, C, D, E, F
1	920915	02	J
	920915	03	A, B, C, D, E
5	920908	04	F, G, H, I, J
10	920918	04	A, B, C, D, E, F, G, H, I, J
10	920918	05	A, B, C, D, E, F, G, H, I, J
10	920918	01	A, B, C, D, E, F, G, H, I, J
10	920914	07	A, B, C, D, E, F, G, H, I, J
4	920914	04	G, H, I, J
6	920914	01	E, F, G, H, I, J
6	920914	05	B, C, D, E, F, G
149	Total		

Lot #	920908	920914	920915	920917	920918
# of rolls	61	42	6	10	30



Tensar

The Tensar Corporation

10000 Old Farm Road
Charlotte, North Carolina 28217
(704) 541-1000

SEPTEMBER 30, 1992

GEO-CON INC
4075 MONROEVILLE BLVD

MONROEVILLE, PA 15146

REFERENCE: TENSAR ORDER NUMBER: 009981
PURCHASE ORDER NUMBER: 19604
BILL OF LADING NUMBER: 129394

SOLD TO: GEO-CON INC
4075 MONROEVILLE BLVD
CORP 1, BLDG 11, SUITE 400

MONROEVILLE, PA 15146

SHIP TO: GEO-CON INC
2448 SOUTH FRANKLIN AVENUE

WEAVERVILLE, IL 14306

This is to certify that TENSAR DC410595 geocomposite as manufactured by the TENSAR Corporation, meets the characteristics and properties per the attached specification sheet. Actual lot number(s) shipped of the core material, 92140007 are as indicated:

<u>LOT NUMBER</u>	<u>NO. ROLLS</u>	<u>THICKNESS (mm)</u>	<u>TENSILE STRENGTH (lb/ft)</u>	<u>% CL</u>
920917	1	5.45	633.4	2.40
920918	9	5.46	643.6	2.40
920926	107	5.60	666.3	2.40
920927	15	5.18	664.7	2.40

Sincerely,

W. S. Shelton

Director Of Production Technology

Notary Public, Clayton County, Georgia
My Commission Expires August 28, 1993.

DRAINAGE NET NS1405 (NOPE)

The drainage net shall be an integrally formed polyethylene net structure. It shall have uniform channels, open area and thickness to assure uniform flow throughout the structure. It shall have high tensile strength and tear strength to resist installation damage and loading on steep slopes. It shall also have a low compressibility under high loadings to maintain a high transmissivity under a range of loading conditions. The drainage net shall also be resistant to ultraviolet degradation. The drainage net shall conform to the property requirements listed below.

PROPERTY	TEST METHOD	NOTES	UNITS	VALUE
<u>Flow Capacity</u>				
Gradient of 1				
Transmissivity @ 500 psf	ASTM 4716		$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	21 (9.55)
Transmissivity @ 10,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	16 (7.24)
@ 20,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	8.6 (3.86)
<u>Mechanical Properties</u>				
Porosity				.81-.84
Peak Tensile Strength MD/TD	ASTM D638 Modified	2,5	lbs/foot	600/336
Melt Index	D-1238		g/10 min	.15-.30
Elongation to Break MD/TD			%	540/350
<u>Material</u>				
Polyethylene-Specific Gravity	ASTM D1505		g/cm ³	0.94
Carbon Black Stabilization	ASTM D4218		%	2.5
<u>Dimensions</u>				
Thickness	O.D. Calipered	2,6,7	inches	0.20
Unit Weight			oz/yd ²	29
Open Area	CDE Method Modified		%	58
Roll Length			ft	98
Roll Width			ft	6.3
Roll Weight			lbs	118

Notes

1. Except where noted all reported test values are nominal.
2. Minimum Value.
3. Compression tests are performed on a 2-inch square sample loaded at a 1mm/minute constant rate of strain.
4. Maximum Value.
5. Tensile Strength and Compressibility properties shall be tested by the manufacturer every 10,000 square yards of products.
6. Thickness is measured by placing the specimen flat on a comparator base and lowering a round 1/2 inch diameter flat end contact surface squarely over a junction.
7. Product thickness shall be measured by the manufacturer every 2,500 square yards of product.
8. No foaming agents were used to manufacture the Drainage Net

The Tensar Corporation
1210 Citizens Parkway
Morrow, GA 30260
(800) 845-4453

SPECIFICATION SHEET
NS1405 H-S
March 12, 1992



Werkstoff

Polyfelt

September 21, 1992

Ann Shockley
 Tensar
 1210 Citizens Parkway
 Morrow, GA 30260

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
 RE: Polyfelt Job #787 Order #6939

Dear Ms. Shockley

This letter certifies that POLYFELT TS700, shipped FOB
 Evergreen, Alabama, on 9/18/92, includes rolls from Lot #
 20139, manufactured by Polyfelt, Inc.

PROPERTY	TEST PROCEDURE	ACTUAL RESULTS ⁽¹⁾
Weight	ASTM D 3776	8.9 oz/yd ²
Thickness	ASTM D 5199	125* Mil
Grab Strength	ASTM D 4632	232 lbs
Grab Elongation	ASTM D 4632	71 %
Tear Strength	ASTM D 4533	99 lbs
Mullen Burst	ASTM D 3786	392 psi
Puncture Resistance	ASTM D 4833	129 lbs
A.O.S.	ASTM D 4751	.180* mm (80) US Sieve
Permittivity	ASTM D 4491	1.5* sec ⁻¹
Water Permeability	ASTM D 4491	0.48* cm/sec
Water Flow Rate	ASTM D 4491	117* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

- (1) Values in weaker principle direction. All values represent actual typical roll values, tested in accordance with ASTM D 4759-88.
- * At time of manufacturing; handling may change these property values.
- (2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

Polyfelt, Inc.

P.O. Box 727
 200 Miller T. Sellers Drive
 Evergreen, Alabama 36401

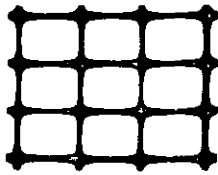
B/L no. 129394

Geo-Con Inc.

St.	Lot #	Roll #s	
1	920917	04	J
5	920927	16	A B C D E
10	920926	12	A B C D E F G H I J
9	920918	02	A B C D E F G H I
10	920926	06	A B C D E F G H I J
10	920926	02	A B C D E F G H I J
10	920927	19	A B C D E F G H I J
10	920926	04	A B C D E F G H I J
10	920926	14	A B C D E F G H I J
10	920926	05	A B C D E F G H I J
10	920926	07	A B C D E F G H I J
1	920926	10	A B C D E F G H I J
7	920926	11	A B C D E F G
5	920926	13	B C D E J
5	920926	09	F G H I J
10	920926	28	A B C D E F G H I J

132 Total

Lot #	920917	920918	920926	920927
no of rolls	1	9	107	15



Tensar

OCT 12 1992
COMM-FBI

The Tensar Corporation

1710 Calhoun Parkway
Atlanta, Georgia 30329
(404) 486-8800

OCTOBER 02, 1992

GEO-CON INC
4075 MONROEVILLE BLVD

MONROEVILLE, PA 15146

REFERENCE: TENSAR ORDER NUMBER: 009981
PURCHASE ORDER NUMBER: 19604
BILL OF LADING NUMBER: 129360

SOLD TO: GEO-CON INC
4075 MONROEVILLE BLVD
CORP 1, BLDG 11, SUITE 400

MONROEVILLE, PA 15146

SHIPPED TO: GEO-CON INC
2418 SOUTH HICKORY STREET

WELLSVILLE, PA 16801

This is to certify that TENSAR DG410595 geocomposite as manufactured by the Tensar Corporation, meets the characteristics and properties per the attached specification sheet. Actual lot number(s) shipped of the core material, DG410595, are as indicated:

<u>LOT</u> <u>NUMBERS</u>	<u>NO.</u> <u>ROLLS</u>	<u>THICKNESS</u> <u>(mm)</u>	<u>TENSILE</u> <u>STRENGTH</u> <u>(lb/ft)</u>	<u>ACT</u>
920914	10	5.41	640.2	2.60
920917	9	5.45	633.4	2.50
920918	1	5.46	643.6	2.40
920926	22	5.60	666.3	2.30
920927	63	5.18	664.9	2.40
920928	20	5.24	638.2	2.40
920929	17	5.11	596.3	2.40

Sincerely,

W. S. Shelton
Director OF Production Technology

DRAINAGE NET WS1405 (MOPE)

The drainage net shall be an integrally formed polyethylene net structure. It shall have uniform channels, open area and thickness to assure uniform flow throughout the structure. It shall have high tensile strength and tear strength to resist installation damage and loading on steep slopes. It shall also have a low compressibility under high loadings to maintain a high transmissivity under a range of loading conditions. The drainage net shall also be resistant to ultraviolet degradation. The drainage net shall conform to the property requirements listed below.

PROPERTY	TEST METHOD	NOTES	UNITS	VALUE
<u>Flow Capacity</u>				
Gradient of 1				
Transmissivity @ 500 psf	ASTM 4716		$\times 10^{-5} \text{ ft}^2/\text{sec}$ (gpm/ft)	21 (9.55)
Transmissivity @ 10,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	16 (7.24)
@ 20,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	8.6 (3.83)
<u>Mechanical Properties</u>				
Porosity				.81-.84
Peak Tensile Strength MD/TD	ASTM D638 Modified	2,5	(lbs/foot)	600/336
Melt Index	D-1238		g/10 min	.15-.30
Elongation to Break MD/TD			%	540/350
<u>Material</u>				
Polyethylene-Specific Gravity	ASTM D1505		g/cm ³	0.94
Carbon Black Stabilization	ASTM D4218		%	2.5
<u>Dimensions</u>				
Thickness	O.D. Calipered	2,6,7	inches	0.20
Unit Weight			oz/yd ²	29
Open Area	COE Method Modified		%	58
Roll Length			ft	98
Roll Width			ft	6.3
Roll Weight			(lbs)	118

Notes

1. Except where noted all reported test values are nominal.
2. Minimum Value.
3. Compression tests are performed on a 2-inch square sample loaded at a 1mm/minute constant rate of strain.
4. Maximum Value.
5. Tensile Strength and Compressibility properties shall be tested by the manufacturer every 10,000 square yards of products.
6. Thickness is measured by placing the specimen flat on a comparator base and lowering a round 1/2 inch diameter flat end contact surface squarely over a junction.
7. Product thickness shall be measured by the manufacturer every 2,500 square yards of product.
8. No foaming agents were used to manufacture the Drainage Net

The Tensar Corporation
1210 Citizens Parkway
Morrow, GA 30260
(800) 845-4453

SPECIFICATION SHEET
WS1405 H-S
March 12, 1992



Werkstoff

Polyfelt

September 21, 1992

Ann Shockley
Tensar
1210 Citizens Parkway
Morrow, GA 30260

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
RE: Polyfelt Job #787 Order #6939

Dear Ms. Shockley

This letter certifies that POLYFELT TS700, shipped FOB
Evergreen, Alabama, on 9/18/92, includes rolls from Lot #
20139, manufactured by Polyfelt, Inc.

PROPERTY	TEST PROCEDURE	ACTUAL RESULTS ⁽¹⁾
Weight	ASTM D 3776	8.9 oz/yd ²
Thickness	ASTM D 5199	125* Mil
Grab Strength	ASTM D 4632	232 lbs
Grab Elongation	ASTM D 4632	71 %
Tear Strength	ASTM D 4533	99 lbs
Mullen Burst	ASTM D 3786	392 psi
Puncture Resistance	ASTM D 4833	129 lbs
A.O.S.	ASTM D 4751	.180* mm (80) US Sieve
Permittivity	ASTM D 4491	1.5* sec ⁻¹
Water Permeability	ASTM D 4491	0.48* cm/sec
Water Flow Rate	ASTM D 4491	117* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

(1) Values in weaker principle direction. All values represent actual typical roll values, tested in accordance with ASTM D 4759-88.

* At time of manufacturing; handling may change these property values.

(2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

Polyfelt, Inc.

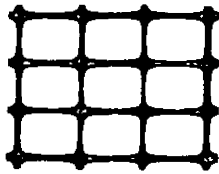
P.O. Box 727
200 Miller T. Sellers Drive
Evergreen, Alabama 36401
Tel. 205-678-4768

B/L no. 129360

Geo-Con Inc.

ty	Lot #	Roll #s
9	920927 21	A, B, C, D, E, F, G, H, I
10	920927 18	A, B, C, D, E, F, G, H, I, J
10	920928 05	A, B, C, D, E, F, G, H, I, J
10	920928 07	A, B, C, D, E, F, G, H, I, J
10	920926 01	A, B, C, D, E, F, G, H, I, J
10	920927 03	A, B, C, D, E, F, G, H, I, J
10	920914 10	A, B, C, D, E, F, G, H, I, J
5	920927 16	F, G, H, I, J
9	920917 04	A, B, C, D, E, F, G, H, I
10	920927 15	A, B, C, D, E, F, G, H, I, J
10	920927 14	A, B, C, D, E, F, G, H, I, J
2	920927 11	A, B
3	920926 11	H, I, J
5	920926 09	A, B, C, D, E
1	920918 02	J
4	920926 13	F, G, H, I
10	920929 07	A, B, C, D, E, F, G, H, I, J
6	920927 09	A, B, C, H, I, J
1	920927 04	I
7	920929 04	A, B, C, D, E, F, G
142 Total		

lot no.	920914	920917	920918	920926	920927	920928	920929
of rolls	10	9	1	22	63	20	17



Tensar

The Tensar Corporation

10000 Old York Road
P.O. Box 10000
Charlotte, NC 28210

OCTOBER 02, 1992

GEO-CON INC
4075 MONROEVILLE BLVD

MONROEVILLE, PA 15146

REFERENCE: TENSAR ORDER NUMBER: 009981
PURCHASE ORDER NUMBER: 19604
BILL OF LADING NUMBER: 129650

SOLD TO: GEO-CON INC
4075 MONROEVILLE BLVD
CORP 1, BLDG 11, SUITE 400

MONROEVILLE, PA 15146

SHIP TO: GEO-CON INC
2448 SOUTH BROAD STREET

WELLSVILLE, PA 16801

This is to certify that TENSAR D6410595 geocomposite as manufactured by the TENSAR Corporation, meets the characteristics and properties per the attached specification sheet. Actual lot number(s) shipped of the core material, D6410595 are as indicated:

<u>LOT</u> <u>NUMBER</u>	<u>NO.</u> <u>ROLLS</u>	<u>THICKNESS</u> (mm)	<u>TENSILE</u> <u>STRENGTH</u> (lb/ft)	<u>VALUE</u>
920927	30	5.18	664.9	2.40
920929	73	5.04	596.3	2.40
921001	36	5.20	710.1	2.60

Sincerely,

W. S. Shelton
Director Of Production Technology

DRAINAGE NET NS1405 (HDPE)

The drainage net shall be an integrally formed polyethylene net structure. It shall have uniform channels, open area and thickness to assure uniform flow throughout the structure. It shall have high tensile strength and tear strength to resist installation damage and loading on steep slopes. It shall also have a low compressibility under high loadings to maintain a high transmissivity under a range of loading conditions. The drainage net shall also be resistant to ultraviolet degradation. The drainage net shall conform to the property requirements listed below.

PROPERTY	TEST METHOD	NOTES	UNITS	VALUE
<u>Flow Capacity</u>				
Gradient of 1				
Transmissivity @ 500 psf	ASTM 4716		$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	21 (9.55)
Transmissivity @ 10,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	16 (7.24)
@ 20,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	8.6 (3.86)
<u>Mechanical Properties</u>				
Porosity				.81-.84
Peak Tensile Strength MD/TD	ASTM D638 Modified	2,5	lbs/foot	600/336
Melt Index	D-1238		g/10 min	.15-.30
Elongation to Break MD/TD			%	540/350
<u>Material</u>				
Polyethylene-Specific Gravity	ASTM D1505		g/cm ³	0.94
Carbon Black Stabilization	ASTM D4218		%	2.5
<u>Dimensions</u>				
Thickness	O.D. Calipered	2,6,7	inches	0.20
Unit Weight			oz/yd ²	29
Open Area	CCE Method Modified		%	58
Roll Length			ft	98
Roll Width			ft	6.3
Roll Weight			lbs	118

Notes

1. Except where noted all reported test values are nominal.
2. Minimum Value.
3. Compression tests are performed on a 2-inch square sample loaded at a 1mm/minute constant rate of strain.
4. Maximum Value.
5. Tensile Strength and Compressibility properties shall be tested by the manufacturer every 10,000 square yards of products.
6. Thickness is measured by placing the specimen flat on a comparator base and lowering a round 1/2 inch diameter flat end contact surface squarely over a junction.
7. Product thickness shall be measured by the manufacturer every 2,500 square yards of product.
8. No foaming agents were used to manufacture the Drainage Net

The Tensar Corporation
1210 Citizens Parkway
Morrow, GA 30260
(800) 845-4433

SPECIFICATION SHEET
NS1405 H-5
March 12, 1992



Werkstoff

Polyfelt

September 21, 1992

Ann Shockley
 Tensar
 1210 Citizens Parkway
 Morrow, GA 30260

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
 RE: Polyfelt Job #787 Order #6939

Dear Ms. Shockley

This letter certifies that POLYFELT TS700, shipped FOB
 Evergreen, Alabama, on 9/18/92, includes rolls from Lot #
 20139, manufactured by Polyfelt, Inc.

PROPERTY	TEST PROCEDURE	ACTUAL RESULTS ⁽¹⁾
Weight	ASTM D 3776	8.9 oz/yd ²
Thickness	ASTM D 5199	125* Mil
Grab Strength	ASTM D 4632	232 lbs
Grab Elongation	ASTM D 4632	71 %
Tear Strength	ASTM D 4533	99 lbs
Mullen Burst	ASTM D 3786	392 psi
Puncture Resistance	ASTM D 4833	129 lbs
A.O.S.	ASTM D 4751	.180* mm (80) US Sieve
Permittivity	ASTM D 4491	1.5* sec ⁻¹
Water Permeability	ASTM D 4491	0.48* cm/sec
Water Flow Rate	ASTM D 4491	117* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

(1) Values in weaker principle direction. All values represent actual typical roll values, tested in accordance with ASTM D 4759-88.

* At time of manufacturing; handling may change these property values.

(2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

Polyfelt, Inc.

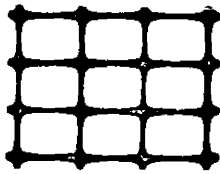
P.O. Box 727
 200 Miller T. Sallars Drive
 Evergreen, Alabama 36401

B/L no. 129650

Geo-Con INC

	Lot #		Roll #'s
3	920929	04	H, I, J
10	920929	11	A, B, C, D, E, F, G, H, I, J
10	920929	09	A, B, C, D, E, F, G, H, I, J
10	920929	01	A, B, C, D, E, F, G, H, I, J
9	921001	08	A, B, C, D, E, F, G, H, I
9	921001	05	A, B, C, D, E, F, G, H, I
2	921001	01	A, B
10	920929	06	A, B, C, D, E, F, G, H, I, J
10	921001	04	A, B, C, D, E, F, G, H, I, J
10	920929	08	A, B, C, D, E, F, G, H, I, J
10	920929	10	A, B, C, D, E, F, G, H, I, J
10	920927	17	A, B, C, D, E, F, G, H, I, J
4	920927	09	D, E, F, G
4	920927	04	E, F, G, H
8	920927	11	C, D, E, F, G, H, I, J
4	920927	08	A, B, C, D
6	921001	07	C, D, E, F, G, H
10	920929	101	A, B, C, D, E, F, G, H, I, J
139			

Lot no.	920927	920929	921001
o. of rolls	30	73	36



Tensar

The Tensar Corporation

1000 Columbia Road
Greenville, Georgia 31501
(404) 636-1000

OCTOBER 05, 1992

GEO-CON INC
4075 MONROEVILLE BLVD

MONROEVILLE, PA 15146

REFERENCE: TENSAR ORDER NUMBER: 000981
PURCHASE ORDER NUMBER: 19004
BILL OF LADING NUMBER: 129031

SOLD TO: GEO-CON INC
4075 MONROEVILLE BLVD
CORP 1, BLDG 11, SUITE 400

MONROEVILLE, PA 15146

SHIP TO: GEO-CON INC
2448 SOUTH BRADSHAW AVENUE

WELLSVILLE, PA 16801

This is to certify that TENSAR DXT410595 geocomposite as manufactured by the TENSAR Corporation, meets the characteristics and properties per the attached specification sheet. Actual lot number(s) shipped of the core material, DXT410597 are as indicated:

<u>LOT</u> <u>NUMBER</u>	<u>NO.</u> <u>ROLLS</u>	<u>THICKNESS</u> (mm)	<u>TENSILE</u> <u>STRENGTH</u> (lb/ft)	<u>W.C.</u>
920918	10	5.46	643.6	2.40
920927	74	5.18	664.9	2.40
920928	7	5.24	638.2	2.40
920930	24	5.35	774.6	2.30
921001	22	5.22	603.9	2.40

Sincerely,

W. S. Shelton
Director Of Production Technology

DRAINAGE NET MS1405 (HDPE)

The drainage net shall be an integrally formed polyethylene net structure. It shall have uniform channels, open area and thickness to assure uniform flow throughout the structure. It shall have high tensile strength and tear strength to resist installation damage and loading on steep slopes. It shall also have a low compressibility under high loadings to maintain a high transmissivity under a range of loading conditions. The drainage net shall also be resistant to ultraviolet degradation. The drainage net shall conform to the property requirements listed below.

PROPERTY	TEST METHOD	NOTES	UNITS	VALUE
<u>Flow Capacity</u>				
Gradient of 1				
Transmissivity @ 500 psf	ASTM 4716		$\times 10^{-5} \text{ ft}^2/\text{sec}$ (gpm/ft)	21 (9.55)
Transmissivity @ 10,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	16 (7.24)
@ 20,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	8.6 (3.86)
<u>Mechanical Properties</u>				
Porosity				.81-.84
Peak Tensile Strength MD/TD	ASTM D638 Modified	2,5	lbs/foot	600/336
Melt Index	D-1238		g/10 min	.15-.30
Elongation to Break MD/TD			%	540/350
<u>Material</u>				
Polyethylene-Specific Gravity	ASTM D1505		g/cm ³	0.94
Carbon Black Stabilization	ASTM D4218		%	2.5
<u>Dimensions</u>				
Thickness	O.D. Calipered	2,6,7	inches	0.20
Unit Weight			oz/yd ²	29
Open Area	COE Method Modified		%	58
Roll Length			ft	98
Roll Width			ft	6.3
Roll Weight			lbs	118

Notes

1. Except where noted all reported test values are nominal.
2. Minimum Value.
3. Compression tests are performed on a 2-inch square sample loaded at a 1mm/minute constant rate of strain.
4. Maximum Value.
5. Tensile Strength and Compressibility properties shall be tested by the manufacturer every 10,000 square yards of products.
6. Thickness is measured by placing the specimen flat on a comparator base and lowering a round 1/2 inch diameter flat end contact surface squarely over a junction.
7. Product thickness shall be measured by the manufacturer every 2,500 square yards of product.
8. No foaming agents were used to manufacture the Drainage Net

The Tensar Corporation
1210 Citizens Parkway
Morrow, GA 30260
(800) 845-4453

SPECIFICATION SHEET
MS1405 H-S
March 12, 1992



Werkstoff

Polyfelt

September 21, 1992

Ann Shockley
Tensar
1210 Citizens Parkway
Morrow, GA 30260

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
RE: Polyfelt Job #787 Order #6939

Dear Ms. Shockley

This letter certifies that POLYFELT TS700, shipped FOB
Evergreen, Alabama, on 9/18/92, includes rolls from Lot #
20139, manufactured by Polyfelt, Inc.

<u>PROPERTY</u>	<u>TEST PROCEDURE</u>	<u>ACTUAL RESULTS</u> (1)
Weight	ASTM D 3776	8.9 oz/yd ²
Thickness	ASTM D 5199	125* Mil
Grab Strength	ASTM D 4632	232 lbs
Grab Elongation	ASTM D 4632	71 %
Tear Strength	ASTM D 4533	99 lbs
Mullen Burst	ASTM D 3786	392 psi
Puncture Resistance	ASTM D 4833	129 lbs
A.O.S.	ASTM D 4751	.180* mm (80) US Sieve
Permittivity	ASTM D 4491	1.5* sec ⁻¹
Water Permeability	ASTM D 4491	0.48* cm/sec
Water Flow Rate	ASTM D 4491	117* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

- (1) Values in weaker principle direction. All values represent actual typical roll values, tested in accordance with ASTM D 4759-88.
- * At time of manufacturing; handling may change these property values.
- (2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

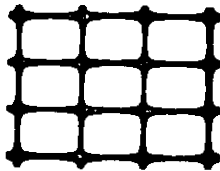
Polyfelt, Inc.

P.O. Box 727
200 Miller T. Sellers Drive
Evergreen, Alabama 36401

Geo-Con Inc
B/L = 129681

DL 410595

<u>Lot</u>	<u>B/L</u>		
920918 = 03	ABCDEF, GHIJ		10
920930 = 12	ACDEFB		6
920928 = 01	A3CDEFH,		7
920927 = 06	AB, CDEF, GH, IJ,		10
920930 = 03	FG, HIJ, ABCDE		10
920930 = 01	DEFGHIJ		7
920927 = 10	A, B, C, D,		4
920927 = 02	F, G, H, I, J, A, B, C, D, E,		10
920930 = 11	A		1
920927 = 20	AB, CDEF, GH, IJ,		10
920927 = 08	AB, CDEF, GH, IJ		10
920927 = 03	ABCDEF, GHIJ		10
921001 = 02	ABCD, EFGH, IJ		10
920927 = 05	ABCDEF, GHIJ,		10
921001 = 07	IJ		2
920927 = 13	ABCD, EFGH, IJ		10
921001 = 03	ABCD, EFGH, IJ,		10



Tensar

The Tensar Corporation

2000 Old York Road
P.O. Box 1000
Charlotte, NC 28220

OCTOBER 05, 1992

GEO-CON INC
4075 MONROEVILLE BLVD

MONROEVILLE, PA 15146

REFERENCE: TENSAR ORDER NUMBER: 009981
PURCHASE ORDER NUMBER: 19604
BILL OF LADING NUMBER: 129682

SOLD TO: GEO-CON INC
4075 MONROEVILLE BLVD
CORP 1, BLDG 11, SUITE 400

MONROEVILLE, PA 15146

SHIP TO: GEO-CON INC
4448 DARTMOUTH AVENUE

WELLSVILLE, PA 16801

This is to certify that TENSAR DC410595 geocomposite as manufactured by the Tensar Corporation, meets the characteristics and properties per the attached specification sheet. Actual lot number(s) shipped of the core material, DC410595, are as indicated:

<u>LOT</u> <u>NUMBER</u>	<u>NO.</u> <u>ROLLS</u>	<u>THICKNESS</u> (mm)	<u>TENSILE</u> <u>STRENGTH</u> (lb/ft)	<u>W.C.P.</u>
920924	10	5.22	630.6	2.40
920927	16	5.18	664.9	2.40
920929	18	5.11	596.3	2.40
920930	35	5.25	774.6	2.30
921001	10	5.22	603.9	2.40

Sincerely,

W. S. Shelton
Director Of Production Technology

DRAINAGE NET NS1405 (MDPE)

The drainage net shall be an integrally formed polyethylene net structure. It shall have uniform channels, open area and thickness to assure uniform flow throughout the structure. It shall have high tensile strength and tear strength to resist installation damage and loading on steep slopes. It shall also have a low compressibility under high loadings to maintain a high transmissivity under a range of loading conditions. The drainage net shall also be resistant to ultraviolet degradation. The drainage net shall conform to the property requirements listed below.

PROPERTY	TEST METHOD	NOTES	UNITS	VALUE
<u>Flow Capacity</u>				
Gradient of 1				
Transmissivity @ 500 psf	ASTM 4716		$\times 10^{-5} \text{ ft}^2/\text{sec}$ (gpm/ft)	21 (9.55)
Transmissivity @ 10,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	16 (7.24)
@ 20,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	8.6 (3.86)
<u>Mechanical Properties</u>				
Porosity				.81-.84
Peak Tensile Strength MD/TD	ASTM D638 Modified	2,5	lbs/foot	600/336
Melt Index	D-1238		g/10 min	.15-.30
Elongation to Break MD/TD			%	540/350
<u>Material</u>				
Polyethylene-Specific Gravity	ASTM D1505		g/cm ³	0.94
Carbon Black Stabilization	ASTM D4218		%	2.5
<u>Dimensions</u>				
Thickness	0.0. Calipered	2,6,7	inches	0.20
Unit Weight			oz/yd ²	29
Open Area	COE Method Modified		%	58
Roll Length			ft	98
Roll Width			ft	6.3
Roll Weight			lbs	118

Notes

1. Except where noted all reported test values are nominal.
2. Minimum Value.
3. Compression tests are performed on a 2-inch square sample loaded at a 1mm/minute constant rate of strain.
4. Maximum Value.
5. Tensile Strength and Compressibility properties shall be tested by the manufacturer every 10,000 square yards of products.
6. Thickness is measured by placing the specimen flat on a comparator base and lowering a round 1/2 inch diameter flat and contact surface squarely over a junction.
7. Product thickness shall be measured by the manufacturer every 2,500 square yards of product.
8. No foaming agents were used to manufacture the Drainage Net

The Tensar Corporation
1210 Citizens Parkway
Morrow, GA 30260
(800) 845-4453

SPECIFICATION SHEET
NS1405 H-S
March 12, 1992



Werkstoff

Polyfelt

September 21, 1992

Ann Shockley
Tensar
1210 Citizens Parkway
Morrow, GA 30260

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
RE: Polyfelt Job #787 Order #6939

Dear Ms. Shockley

This letter certifies that POLYFELT TS700, shipped FOB
Evergreen, Alabama, on 9/18/92, includes rolls from Lot #
20139, manufactured by Polyfelt, Inc.

<u>PROPERTY</u>	<u>TEST PROCEDURE</u>	<u>ACTUAL RESULTS</u> (1)
Weight	ASTM D 3776	8.9 oz/yd ²
Thickness	ASTM D 5199	125* Mil
Grab Strength	ASTM D 4632	232 lbs
Grab Elongation	ASTM D 4632	71 %
Tear Strength	ASTM D 4533	99 lbs
Mullen Burst	ASTM D 3786	392 psi
Puncture Resistance	ASTM D 4833	129 lbs
A.O.S.	ASTM D 4751	.180* mm (80) US Sieve
Permittivity	ASTM D 4491	1.5* sec ⁻¹
Water Permeability	ASTM D 4491	0.48* cm/sec
Water Flow Rate	ASTM D 4491	117* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

(1) Values in weaker principle direction. All values represent actual typical roll values, tested in accordance with ASTM D 4759-88.

* At time of manufacturing; handling may change these property values.

(2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

Polyfelt, Inc.

P.O. Box 727
200 Miller T. Sellers Drive
Evergreen, Alabama 36401

B/L no. 129682

Geo-Con Inc.

	Lot #	Roll #	
10	920924	07	A, B, C, D, E, F, G, H, I, J
10	920929	02	A, B, C, D, E, F, G, H, I, J
10	921001	01	A, B, C, D, E, F, G, H, I, J
10	920930	04	A, B, C, D, E, F, G, H, I, J
10	920930	05	A, B, C, D, E, F, G, H, I, J
4	920930	02	A, H, I, J
3	920930	01	A, B, C
8	920929	03	C, D, E, F, G, H, I, J
10	920930	10	A, B, C, D, E, F, G, H, I, J
10	920930	09	A, B, C, D, E, F, G, H, I, J
10	920927	07	A, B, C, D, E, F, G, H, I, J
10	920930	08	A, B, C, D, E, F, G, H, I, J
5	920930	07	A, B, C, D, E, F, G, H, I, J
6	920927	10	E, F, G, H, I, J
10	920930	06	A, B, C, D, E, F, G, H, I, J
9	920930	11	B, C, D, E, F, G, H, I, J

140 Total

920924

10

920927

16

920929

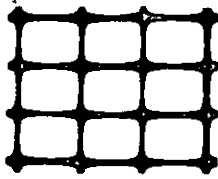
18

920930

86

921001

10



Tensor

The Tensor Corporation

1210 Citizens Parkway
Monroe, Georgia 30266
Tel: (404) 968-3825

OCTOBER 12, 1992

GEO-COM INC
4075 MONROEVILLE BLVD

MONROEVILLE, PA 15146

REFERENCE: TENSAR ORDER NUMBER: 007981
PURCHASE ORDER NUMBER: 19604
BILL OF LADING NUMBER: 129835

SOLD TO: GEO-COM INC
4075 MONROEVILLE BLVD
CORP 1, BLDG 11, SUITE 400
MONROEVILLE, PA 15146

SHIP TO: GEO-COM INC
2435 LANTANA DR, SUITE 100
WELLSVILLE, PA 16801

This is to certify that TENSAR DG410500 geocomposite as manufactured by the Tensor Corporation, meets the characteristics and properties per the attached specification sheet. Actual lot number(s) shipped of the core material, DG410500 are as indicated:

<u>LOT</u> <u>NUMBER</u>	<u>NO.</u> <u>ROLLS</u>	<u>THICKNESS</u> (mm)	<u>TENSILE</u> <u>STRENGTH</u> (lb/ft)	<u>SIZE</u>
920908	7	5.25	675.8	2.75
920914	5	5.41	640.2	2.60
920915	5	5.30	604.0	2.40
920927	10	5.31	664.9	2.40
920928	2	5.24	638.2	2.40
920929	12	5.21	696.3	2.40

Sincerely,

W. S. Shelton
Director Of Production Technology

DRAINAGE NET NS1405 (MDPE)

The drainage net shall be an integrally formed polyethylene net structure. It shall have uniform channels, open area and thickness to assure uniform flow throughout the structure. It shall have high tensile strength and tear strength to resist installation damage and loading on steep slopes. It shall also have a low compressibility under high loadings to maintain a high transmissivity under a range of loading conditions. The drainage net shall also be resistant to ultraviolet degradation. The drainage net shall conform to the property requirements listed below.

PROPERTY	TEST METHOD	NOTES	UNITS	VALUE
<u>Flow Capacity</u>				
Gradient of 1				
Transmissivity @ 500 psf	ASTM 4716		$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	21 (9.55)
Transmissivity @ 10,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	16 (7.24)
@ 20,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	8.6 (3.86)
<u>Mechanical Properties</u>				
Porosity				.81-.84
Peak Tensile Strength MD/TD	ASTM D638 Modified	2,5	lbs/foot	600/336
Melt Index	D-1238		g/10 min	.15-.30
Elongation to Break MD/TD			%	540/350
<u>Material</u>				
Polyethylene-Specific Gravity	ASTM D1505		g/cm ³	0.74
Carbon Black Stabilization	ASTM D4218		%	2.5
<u>Dimensions</u>				
Thickness	O.D. Calipered	2,6,7	inches	0.20
Unit Weight			oz/yd ²	29
Open Area	COE Method Modified		%	58
Roll Length			ft	98
Roll Width			ft	6.3
Roll Weight			lbs	118

Notes

1. Except where noted all reported test values are nominal.
2. Minimum Value.
3. Compression tests are performed on a 2-inch square sample loaded at a 1mm/minute constant rate of strain.
4. Maximum Value.
5. Tensile Strength and Compressibility properties shall be tested by the manufacturer every 10,000 square yards of products.
6. Thickness is measured by placing the specimen flat on a comparator base and lowering a round 1/2 inch diameter flat end contact surface squarely over a junction.
7. Product thickness shall be measured by the manufacturer every 2,500 square yards of product.
8. No foaming agents were used to manufacture the Drainage Net

The Tensar Corporation
1210 Citizens Parkway
Morrow, GA 30260
(800) 845-4453

SPECIFICATION SHEET
NS1405 H-S
March 12, 1992



Werkstoff

Polyfelt

September 21, 1992

Ann Shockley
Tensar
1210 Citizens Parkway
Morrow, GA 30260

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
RE: Polyfelt Job #787 Order #6939

Dear Ms. Shockley

This letter certifies that POLYFELT TS700, shipped FOB
Evergreen, Alabama, on 9/18/92, includes rolls from Lot #
20139, manufactured by Polyfelt, Inc.

<u>PROPERTY</u>	<u>TEST PROCEDURE</u>	<u>ACTUAL RESULTS</u> (1)
Weight	ASTM D 3776	8.9 oz/yd ²
Thickness	ASTM D 5199	125* Mil
Grab Strength	ASTM D 4632	232 lbs
Grab Elongation	ASTM D 4632	71 %
Tear Strength	ASTM D 4533	99 lbs
Mullen Burst	ASTM D 3786	392 psi
Puncture Resistance	ASTM D 4833	129 lbs
A.O.S.	ASTM D 4751	.180* mm (80) US Sieve
Permittivity	ASTM D 4491	1.5* sec ⁻¹
Water Permeability	ASTM D 4491	0.48* cm/sec
Water Flow Rate	ASTM D 4491	117* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

- (1) Values in weaker principle direction. All values represent actual typical roll values, tested in accordance with ASTM D 4759-88.
- * At time of manufacturing; handling may change these property values.
- (2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

Polyfelt, Inc.

P.O. Box 727
200 Miller T. Sellers Drive
Evergreen, Alabama 36401

Geo-Con Inc.

B/L no. 129835

<u>Q+Y</u>	<u>Lot #</u>	<u>Roll #s</u>
4	920914	01 A, B, C, D
1	920914	05 I
10	920929	05 A, B, C, D, E, F, G, H, I, J
2	920929	03 A, B
10	920927	12 A, B, C, D, E, F, G, H, I, J
2	920928	01 I, J
6	920908	01 C, D, E, F, G, H
5	920915	03 F, G, H, I, J
1	920908	02 A
41		

<u>Lot no</u>	<u>920914</u>	<u>920929</u>	<u>920927</u>	<u>920928</u>	<u>920908</u>	<u>920915</u>
<u>no of rolls</u>	5	12	10	2	7	5

OCT-28-1992 18:39 FROM TENSAR ENVIRONMENTAL SYS TO

17165937082 P.01



Tensar

Chris Bailey
716-513-7882

The Tensar Corporation

1210 Citizens Parkway
Morrow, Georgia 30260
Tel. (404) 966-6255

OCTOBER 27, 1992

GEO-CON INC
4075 MONROEVILLE BLVD

MONROEVILLE, PA 15146

REFERENCE: TENSAR ORDER NUMBER: 009981
PURCHASE ORDER NUMBER: 19604
BILL OF LADING NUMBER: 129915

SOLD TO: GEO-CON INC
4075 MONROEVILLE BLVD
CORP 1, BLDG 11, SUITE 400

MONROEVILLE, PA 15146

SHIP TO: GEO-CON INC
2446 SOUTH BROOKLYN AVENUE

WELLSVILLE, NY 14895

This is to certify that TENSAR D0410595 geocomposite as manufactured by the TENSAR Corporation, meets the characteristics and properties per the attached specification sheet. Actual lot number(s) shipped of the core material, NS140597 are as indicated:

<u>LOT</u> <u>NUMBER</u>	<u>NO.</u> <u>ROLLS</u>	<u>THICKNESS</u> (mm)	<u>TENSILE</u> <u>STRENGTH</u> (lb/ft)	<u>% CB</u>
920914	4	5.41	640.9	2.50

Sincerely,

W. S. Shelton
Director Of Production Technology

DRAINAGE NET NS1405 (MOPE)

The drainage net shall be an integrally formed polyethylene net structure. It shall have uniform channels, open area and thickness to assure uniform flow throughout the structure. It shall have high tensile strength and tear strength to resist installation damage and loading on steep slopes. It shall also have a low compressibility under high loadings to maintain a high transmissivity under a range of loading conditions. The drainage net shall also be resistant to ultraviolet degradation. The drainage net shall conform to the property requirements listed below.

PROPERTY	TEST METHOD	NOTES	UNITS	VALUE
<u>Flow Capacity</u>				
Gradient of 1				
Transmissivity @ 500 psf	ASTM 4716		$\times 10^{-5} \text{ ft}^2/\text{sec}$ (gpm/ft)	21 (9.55)
Transmissivity @ 10,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	16 (7.24)
@ 20,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	8.6 (3.86)
<u>Mechanical Properties</u>				
Porosity				.81-.84
Peak Tensile Strength MD/TD	ASTM D638 Modified	2,5	lbs/foot	600/336
Melt Index	D-1238		g/10 min	.15-.30
Elongation to Break MD/TD			%	540/350
<u>Material</u>				
Polyethylene-Specific Gravity	ASTM D1505		g/cm ³	0.94
Carbon Black Stabilization	ASTM D4218		%	2.5
<u>Dimensions</u>				
Thickness	0.0. Calipered	2,5,7	inches	0.29
Unit Weight			oz/yd ²	29
Open Area	COE Method Modified		%	58
Roll Length			ft	98
Roll Width			ft	6.3
Roll Weight			lbs	118

Notes

1. Except where noted all reported test values are nominal.
2. Minimum Value.
3. Compression tests are performed on a 2-inch square sample loaded at a 1mm/minute constant rate of strain.
4. Maximum Value.
5. Tensile Strength and Compressibility properties shall be tested by the manufacturer every 10,000 square yards of products.
6. Thickness is measured by placing the specimen flat on a comparator base and lowering a round 1/2 inch diameter flat and contact surface squarely over a junction.
7. Product thickness shall be measured by the manufacturer every 2,500 square yards of product.
8. No foaming agents were used to manufacture the Drainage Net



Werkstoff

Polyfelt

September 21, 1992

Ann Shockley
Tensar
1210 Citizens Parkway
Morrow, GA 30260

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
RE: Polyfelt Job #787 Order #6939

Dear Ms. Shockley
This letter certifies that POLYFELT TS700, shipped FOB
Evergreen, Alabama, on 9/18/92, includes rolls from Lot #
20139, manufactured by Polyfelt, Inc.

PROPERTY	TEST PROCEDURE	ACTUAL RESULTS ⁽¹⁾
Weight	ASTM D 3776	8.9 oz/yd ²
Thickness	ASTM D 5199	125* Mil
Grab Strength	ASTM D 4632	232 lbs
Grab Elongation	ASTM D 4632	71 %
Tear Strength	ASTM D 4533	99 lbs
Hullen Burst	ASTM D 3786	392 psi
Puncture Resistance	ASTM D 4833	129 lbs
A.O.S.	ASTM D 4751	.180* mm (80) US Sieve
Permittivity	ASTM D 4491	1.5* sec ⁻¹
Water Permeability	ASTM D 4491	0.48* cm/sec
Water Flow Rate	ASTM D 4491	117* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

- (1) Values in weaker principle direction. All values represent actual typical roll values, tested in accordance with ASTM D 4759-88.
- * At time of manufacturing; handling may change these property values.
- (2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

Polyfelt, Inc.

P.O. Box 727
200 Miller T. Sellers Drive
Evergreen, Alabama 38401

OCT-28-1992 18:40 FROM TENSAR ENVIRONMENTAL S15 TO

B/L no. 129915

Geo-Con Inc

Y	Lot no.	Roll no.'s
4	920914	04 A,B,C,E

P1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 22
CONTRACT NO. C91028-003-01
GEOSYNTHETIC DRAINAGE LINER CERTIFICATES OF COMPLIANCE
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

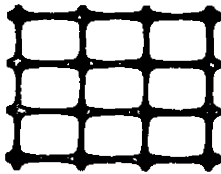
REN

Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

Certificates of Compliance

Attatched are the certificates of compliance for the final load of geosynthetic drainage liner which was received at the Sinclair Refinery site in Wellsville, New York.



Tensor

The Tensor Corporation

1210 Citizens Parkway
Doraville, Georgia 30260
Tel. (404) 968-3255

OCTOBER 29, 1992

GEO-CON INC
4075 MONROEVILLE BLVD
MONROEVILLE, PA 15146

RECEIVED

NOV - 2 1992

GEO-CON, INC.

REFERENCE: TENSAR ORDER NUMBER: 009981
PURCHASE ORDER NUMBER: 19604
BILL OF LADING NUMBER: 130337

SOLD TO: GEO-CON INC
4075 MONROEVILLE BLVD
CORP 1, BLDG 11, SUITE 400
MONROEVILLE, PA 15146

SHIP TO: GEO-CON INC
2448 SOUTH PROCKLIN AVENUE
WELLSVILLE, IN 46795

This is to certify that TENSAR DC410595 geocomposite as manufactured by the TENSAR Corporation, meets the characteristics and properties per the attached specification sheet. Actual lot number(s) shipped of the core material, DC140597 are as indicated:

<u>LOT</u> <u>NUMBER</u>	<u>NO.</u> <u>ROLLS</u>	<u>THICKNESS</u> (mm)	<u>TENSILE</u> <u>STRENGTH</u> (lb/ft)	<u>W.C.B.</u>
920914	2	5.41	640.9	2.50

Sincerely,

W. S. Shelton
Director Of Production Technology

Notary Public, Clayton County, Georgia
My Commission Expires August 28, 1993.

DRAINAGE NET NS1405 (HDPE)

The drainage net shall be an integrally formed polyethylene net structure. It shall have uniform channels, open area and thickness to assure uniform flow throughout the structure. It shall have high tensile strength and tear strength to resist installation damage and loading on steep slopes. It shall also have a low compressibility under high loadings to maintain a high transmissivity under a range of loading conditions. The drainage net shall also be resistant to ultraviolet degradation. The drainage net shall conform to the property requirements listed below.

PROPERTY	TEST METHOD	NOTES	UNITS	VALUE
Flow Capacity				
Gradient of 1				
Transmissivity @ 500 psf	ASTM 4716		$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	23 (9.55)
Transmissivity @ 10,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	18 (7.24)
@ 20,000 psf			$\times 10^{-3} \text{ ft}^2/\text{sec}$ (gpm/ft)	8.6 (3.46)
Mechanical Properties				
Porosity				.81-.84
Peak Tensile Strength MD/TD	ASTM D638 Modified	2,5	lbs/foot	600/336
Melt Index	D-1238		g/10 min	.15-.30
Elongation to Break MD/TD			%	540/358
Material				
Polyethylene-Specific Gravity	ASTM D1505		g/cm ³	0.94
Carbon Black Stabilization	ASTM D4218		%	2.5
Dimensions				
Thickness	O.D. Calipered	2,6,7	inches	0.20
Unit Weight			oz/yd ²	29
Open Area	COE Method Modified		%	58
Roll Length			ft	98
Roll Width			ft	6.3
Roll Weight			lbs	118

Notes

1. Except where noted all reported test values are nominal.
2. Minimum Value.
3. Compression tests are performed on a 2-inch square sample loaded at a 1in/minute constant rate of strain.
4. Maximum Value.
5. Tensile Strength and Compressibility properties shall be tested by the manufacturer every 10,000 square yards of products.
6. Thickness is measured by placing the specimen flat on a comparator base and lowering a round 1/2 inch diameter flat end contact surface squarely over a junction.
7. Product thickness shall be measured by the manufacturer every 2,500 square yards of product.
8. No foaming agents were used to manufacture the Drainage Net

The Tensar Corporation
1210 Glitzers Parkway
Horry, DE 39560
(800) 663-4433

SPECIFICATION SHEET
NS1405 H-S
March 12, 1992



Werkstoff

Polyfelt

September 21, 1992

Ann Shockley
Tensar
1210 Citizens Parkway
Morrow, GA 30260

SUBJECT: POLYFELT TS700 Geotextile Certificate of Compliance
RE: Polyfelt Job #787 Order #6939

Dear Ms. Shockley
This letter certifies that POLYFELT TS700, shipped FOB
Evergreen, Alabama, on 9/18/92, includes rolls from Lot #
20139, manufactured by Polyfelt, Inc.

PROPERTY	TEST PROCEDURE	ACTUAL RESULTS ⁽¹⁾
Weight	ASTM D 3776	8.9 oz/yd ²
Thickness	ASTM D 5199	125* Mil
Grab Strength	ASTM D 4632	232 lbs
Grab Elongation	ASTM D 4632	71 %
Tear Strength	ASTM D 4533	99 lbs
Mullen Burst	ASTM D 3786	392 psi
Puncture Resistance	ASTM D 4833	129 lbs
A.O.S.	ASTM D 4751	.180* mm (80) US Sieve
Permittivity	ASTM D 4491	1.5* sec ⁻¹
Water Permeability	ASTM D 4491	0.48* cm/sec
Water Flow Rate	ASTM D 4491	117* gpm/ft ²
U.V. Resistance (500 hrs)	ASTM D 4355	70(2) %

- (1) Values in weaker principle direction. All values represent actual typical roll values, tested in accordance with ASTM D 4759-88.
- * At time of manufacturing; handling may change these property values.
- (2) UV resistance testing is based on results from independent conformance testing.

Polyfelt, Inc. issues this letter of certification to indicate our commitment to providing our customers with a quality product which will meet or exceed the minimum average roll values in accordance with the applicable American Society for Testing and Materials (ASTM) test method.

Sincerely,

Applications Engineer

Polyfelt, Inc.

P.O. Box 727
200 Miller T. Sellers Drive
Evergreen, Alabama 36401

B/L no. 130337

Geo-Con Inc

	Lot no.	Roll no's
2	920914	04 D, F

GAS VENT PIPING AND PERFORATIONS

- **DATA**
- **CERTIFICATE OF COMPLIANCE**

DATA



GEO SYNTec CONSULTANTS

ARCO 

SUBMITTAL COVER SHEET

1992 year

PROJECT: CELA S ~~SE~~ L CAP PROJECT NO.: GQ3201 TASK NO.: 02 03

LOCATION: WELLSVILLE, NEW YORK CONTRACTOR: GEO-CON, INC. (C91028-003-01)

SUBMITTAL NO.: 28 QCL 19 REVISION NO.:

SUBMITTAL TITLE: GAS VENT PIPING & PIPE PERFORATIONS

DATE RECEIVED: 10 / AUG / 92
(day/ month/ yr)

DATE REVIEWED: 12 / AUG / 92
(day/ month/ yr)

RESUBMITTAL REQUIRED: ☐ YES

☒ NO

DATE APPROVED: 12 / AUG / 92
(day/ month/ yr)

COMMENTS: Perforation size is 0.5 in. Gas vent gravel gradation indicates < 2% of material is finer than 1/2-in size.

DISTRIBUTION:

BY: 
GEO SYNTec CONSULTANTS

BY: 
ARCO

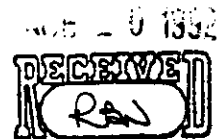
P1-0129

SUBMITTAL 28QC19
CONTRACT NO. C91027-003-01
GAS VENT PIPING AND PIPE PERFORATIONS
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor



Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

Gas Vent Piping

Pipe for the passive gas vent layer venting system will be 6 inch SDR 11 HDPE Series 1000 Driscopipe, with a cell classification of 345434C. Attached is a properties sheet with physical and performance properties for the Driscopipe 1000 series.

Gas Vent Perforations

Perforations for the gas vent piping will consist of 8 rows of 1/2 inch holes, 45 degrees apart, and 3" on center. Attached is a paper on the structural performance of perforated and slotted HDPE pipes.

**THE FOLLOWING
IS/ARE THE BEST
IMAGES FROM POOR
QUALITY ORIGINAL(S)**

**IMAGE
DATA**

Driscopipe 1000

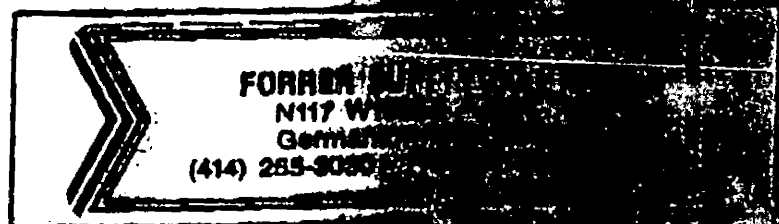
Nominal Material Physical and Pipe Performance Properties

Property	Specification	Units	Typical Value
Material Designation	PPI/ASTM	-	PH3400
Material Classification	ASTM D-1248	-	III C 9 P16
Cell Classification	ASTM D-3350	-	348424C
Density (3)	ASTM D-1505	gm/cm ³	0.988
Melt Flow (4)	ASTM D-1238	gm/10 min	<0.14 @ 2.15
Flex Modulus (5)	ASTM D-790	psi	135,000
Tensile Str. (4)	ASTM D-638	psi	3200
ESCR (3)	ASTM D-1693	F ₀ , Hrs	F ₀ > 8000
HDB @ 73°F (4)	ASTM D-2637	psi	1800
U-V Stabilizer (C)	ASTM D-1603	%C	2.5
Hardness	ASTM D-2240	Shore "D"	64
Compressive Strength (Yield)	ASTM D-695	psi	1600
Tensile Strength @ Yield (Type IV Spec.)	ASTM D-638 (2"/min)	psi	1200
Elongation @ Yield	ASTM D-638	%, minimum	8
Tensile Strength @ Break (Type IV Spec.)	ASTM D-638	psi	5000
Elongation @ Break	ASTM D-638	%, minimum	780
Modulus of Elasticity	ASTM D-638	psi	130,000
ESCR:			
(Cond A, B, C: Mold. Slab)	ASTM D-1693	F ₀ , Hrs	F ₀ > 8000**
(Compressed Ring (Pipe))	ASTM F-1248	F ₃₀ , Hrs	F ₃₀ > 1000**
Slow Crack Growth	Battelle Method	Days to Failure	F ₀ 32
Impact Strength (IZOD) (.125" THK)	ASTM D-256 (Method A)	In-lb/in Notch	42
Fatigue Endurance	Battelle Rotary	Cycles @ ±1600 psi @ 9 RPM	F ₀ > 3,000
Linear Thermal Expansion Coef.	ASTM D-696	in/in/°F	1.2 x 10 ⁻⁴
Thermal Conductivity	ASTM C-177	BTU-in/ft ² /hrs/°F	2.7
Brittleness Temp.	ASTM D-746	°F	4180°F
Vicat Soft. Temp.	ASTM D-1525	°F	4287
Heat Fusion Cond.	-	psi @ °F	78 @ 400°F
NSF Listing	Standard #14	-	Listed for Pot. Water

* This list of Typical Physical Properties is intended for characterization of the pipe, and does not represent individual determinations or specifications.

** Tests were discontinued because no failures and/or stress crack initiation.

Distributed by:



This document reports accurate and reliable information to the best of our knowledge and belief. It is not intended to be used as a basis for any warranty or recommendation. The user of such information assumes all risk associated with its use. Phillips Driscopipe and its subsidiaries assume no responsibility for the use of information presented herein and hereby expressly disclaim all liability in respect to such use.

To secure product information or literature, contact:

Phillips Driscopipe
N117 Wilson
Germantown, WI 53032
(414) 285-5050

CERTIFICATE OF COMPLIANCE

F1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 13
CONTRACT NO. C91028-003-01
POLYETHYLENE PIPE CERTIFICATES OF COMPLIANCE
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700



PHILLIPS DRISCOPIPE, INC.
A SUBSIDIARY OF PHILLIPS 66 COMPANY

2828 NORTH CENTRAL EXPRESSWAY, SUITE 100
P. O. BOX 63-2004
RICHARDSON, TEXAS 75083 • 214/783-2000

November 8, 1991

TO WHOM IT MAY CONCERN:

This will certify that Driscopipe® 1000 pipe meets the requirements of ASTM F714, and is classified as a PE 345434C pipe according to ASTM D3380. The material from which Driscopipe® 1000 is extruded is designated as a Type III, Class C, Category 5, Grade P34 material based on ASTM D1248 and has a Plastic Pipe Institute recommended hydrostatic design basis of 1600 psi based on TR-3/89 as derived from ASTM D2837 methodology.

If you have any questions or desire additional information, please do not hesitate to give me a call.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. F. Mangan".

D. F. Mangan
Quality Assurance Specialist

DFM:rb

MONITORING WELLS, PIEZOMETERS, AND PIPE SLEEVES

- **MONITORING WELL AND PIEZOMETER
CERTIFICATES OF COMPLIANCE**
- **PIPE SLEEVE CERTIFICATE OF COMPLIANCE**
- **MONITORING WELL, PIEZOMETER, AND PIPE
SLEEVE COVERS**

**MONITORING WELL AND PIEZOMETER
CERTIFICATES OF COMPLIANCE**

P1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 14
CONTRACT NO. C91028-003-01
MONITORING WELL & PIEZOMETER CERTIFICATES OF COMPLIANCE
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700



Environmental
Well Products Co.

September 20, 1992

Mr. Joe Genovese
Empire Soil Investigations
5167 S. Park Ave.
Hamburg, NY 14075

MATERIAL CERTIFICATION

Environmental Well Products Company, 1639 Stanley Avenue, Dayton, Ohio, certifies that all wire used to fabricate screen and all pipe used to fabricate and fittings and riser pipe is mill certified to ASTM A312 Specifications.

Mill certification is obtained with every shipment of raw materials received at Environmental Well Products Company and can be supplied with orders upon request.

Very truly yours,

ENVIRONMENTAL WELL PRODUCTS CO.

Doni Curo

Ton
Sale ger

**PIPE SLEEVE
CERTIFICATES OF COMPLIANCE**

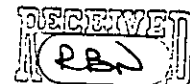
PI 0129

SUBMITTAL 28QC04
ADDENDUM NO. 19
CONTRACT NO. C91028-003-01
CERTIFICATE OF COMPLIANCE
PIPE SLEEVES FOR FUTURE SUBSURFACE ACCESS
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor



Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

Material Warranty

As per discussions with Geosyntec, attached is a letter and supporting pipe specifications from the supplier of the pipe sleeves for future subsurface access showing that A53B steel is a suitable substitute for the A501 steel which was specified for use in the pipe sleeves. Also per these discussions, these pipe sleeves are 8" in diameter with extra strong walls.

10/28/84



Forrer Supply Co., Inc.

1117 W-18 30th Floor Drive
Carmichael, CA 95022
Phone (415) 251-8100
FAX (415) 255-4064

October 29, 1992

Mr. Chris Bailey
GEO-CON
2448 S. Brookland Avenue
Wellsville, NY 14895
Fax #(716) 593-7882

Dear Chris;

Forrer Supply Company, Inc. is pleased to provide you with the following information on steel pipe:

A-501 is a economical steel pipe for structural purposes only.

A-53-B steel pipe is a much better quality pipe.
See accompanying specifications.

If you have any questions or need further information, please don't hesitate to call.

Sincerely,

Ron Peot
Sales Representative



Steel Tubular Products Company

SHIPPER'S NUMBER

810113479

CERTIFICATE OF TESTS

SALES ORDER NO

072567 00

BILL OF LADING NUMBER

810113479

FUL. ORD. DATE

5/19/92

PURCHASE ORDER NO

60-S-03873

HARMON/KEYSTONE CORP
10700 HARMON DRIVE

LEMONT

IL 60439

HARMON/KEYSTONE CORP
156 AND EXIT 269

LEMONT

IL 60439

DATE

5/26/92

ROUTE

I HEREBY CERTIFY THAT THE MATERIAL LISTED HEREIN HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE METHODS PRESCRIBED IN THE GOVERNING SPECIFICATIONS AND BASED UPON THE RESULTS OF SUCH INSPECTION AND TESTING HAS BEEN APPROVED FOR CONFORMANCE TO THE SPECIFICATIONS.

ITEM NO	MATERIAL DESCRIPTION	QUANTITY SHIPPED	UNIT
001	ERW STANDARD PIPE 8.625 OD .500W DRL API 5L/ASTM A53-90B GRD B ASME SA53B PE BEV REG MILL COAT	1066.0 FT	

#	TYPE	HEAT NO.	C	MN	P	S	SI	CU	NI
0	HEAT	0953575	.220	.930	.010	.004	.020	.020	.010
			CR	MO	V	AL	CB	CA	SN
			.030	.010	.000	.055	.00	.003	.003
			B						

LOT NUMBER TENSILE TEST:
1 0953575

ORIENT YIELD STR WALL STR WELD STR
TRANS 54740 68150 77650

2" ELONG HYDROTEST: PRESS DUR
37 X 3000 5

FLAT
OK

LOW GAGE

REVIEWED

5-29-92

STEEL TUBULAR PRODUCTS DIVISION
HARMON/KEYSTONE CORP

MAY 27 1992

OTHER PIPE SPECIFICATIONS

API 5LX

Covers standards for more rigorously tested line pipe, having greater tensile and bursting strengths than pipe made to API 5L. Sizes 4 1/4" OD through 42" OD, inclusive, in Grades X-42 through X-65. Pipe to this specification is not intended for high-temperature service.

ASTM A-135

Covers two grades (A and B) of electric-resistance-welded pipe, 30" and under, intended for conveying liquid, gas, or vapor. Only grade A is adapted for flanging and bending. Purpose for which pipe is intended should be stated in the order.

ASTM A-139

Covers two grades (A and B) of electric-fusion (arc)-welded straight-seam or spiral-seam pipe, 4" to 42", inclusive, wall thicknesses up to .750, inclusive. Pipe intended for conveying liquid, gas, or vapor.

ASTM A-155

Covers electric-fusion-welded pipe for high-temperature, high-pressure service, in sizes 16" OD and larger. Pipe is suitable for bending, flanging (vanstoning) and similar forming operations. Several grades of carbon steel and alloy steel plates are covered.

ASTM A-211

Covers spiral-welded steel or iron pipe, sizes 4" through 48", inclusive, in light gage wall thicknesses. Pipe is intended for conveying liquid, gas or vapor. Purpose for which pipe is intended should be stated in the order.

ASTM A-252

Covers three grades (physical properties) of welded and seamless black pipe piles of cylindrical shape either as permanent load-carrying members or shells to form cast-in-place concrete piles. Not intended to apply to pipe for general structural purposes. Sizes 6" OD through 20" OD.

ASTM A-333

Covers seamless and welded carbon and alloy steel pipe for low-temperature service. Several grades are listed. Special product note: Youngstown's seamless YOLOV pipe meets the requirements of Grade 9, for minus 100 degrees F. service.

ASTM A-501

Covers hot-formed, welded and seamless carbon steel pipe. Minimum yield point, 36,000 psi. Square, round, rectangular or special shapes for welded, riveted or bolted construction of bridges and buildings and for general structural purposes.

ASTM A-523

Covers seamless and electric-resistance-welded steel pipe used as conduit for the installation of high pressure pipe-type electrical cables. Suitable for welding and for forming operations involving flaring, beelling and bending.

ASTM A-524

Covers seamless carbon steel pipe for process piping applications suitable for welding, bending, flanging and similar forming operations. Two grades, I and II, are specified. Sizes 1/2" to 26", inclusive. Pipe is heat treated.

ASTM A-589

Covers four types of threaded and coupled carbon steel pipe for use in water wells. Type I, Drive pipe. Type II, Water-Well Reamed and drifted pipe. Type III, Driven Well pipe. Type IV, Water-Well Casing pipe.

ASTM A-312

Covers fifteen grades of seamless and welded austenitic stainless steel pipe for high-temperature and general corrosive service.

ASTM A-335

Covers twelve grades of seamless alloy-steel pipe for high-temperature service suitable for bending, flanging (vanstoning) and similar forming operations.

YOUNGSTOWN DISTRICT 5

ADDITIONAL COPIES OF THIS BOOK YOUNGSTOWN DISTRICT 5

ATLANTA, GEORGIA 30301
40 Marietta Street, N.W. — 1106 First Floor
BOSTON, MASSACHUSETTS 02199
4350 Prudential Center
BUFFALO, NEW YORK 14203
Suite 1650, Ten Lafayette Square
CHICAGO, ILLINOIS 60602
69 West Washington Street
CINCINNATI, OHIO 45237
405 Carousel Towers — 8075 Reading Road
CLEVELAND, OHIO 44114
100 Erieview Plaza, Room 2140
COLUMBUS, OHIO 43212
1820 Northwest Boulevard
DALLAS, TEXAS 75201
517 Mercantile Continental Building —
DENVER, COLORADO 80202
518 - 17th Street — 1449 Denver Club Building
DES MOINES, IOWA 50309
605 Hubbell Building — SW Corner 9th & 10th
DETROIT, MICHIGAN 48202
927 Fisher Building — West Grand Boulevard
GRAND RAPIDS, MICHIGAN 49205
800 Old Kent Building — No. 1 Vandenberg
HOUSTON, TEXAS 77021
Suite 2002 Post Oak Tower — 5051 West Loop
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212 Nolan Building — 2100 Gardner Lane
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MINNEAPOLIS, MINNESOTA 55402
706 Second Avenue, South — 1238 Baker
NEW ORLEANS, LOUISIANA 70112
430 Saratoga Building — 212 Loyola Avenue
NEW YORK, NEW YORK 10036
500 Fifth Avenue
PHILADELPHIA, PENNSYLVANIA 19103
1700 Market Street — Suite 1804 — 17B
PITTSBURGH, PENNSYLVANIA 15222
Suite 690 — One Gateway Center
ST. LOUIS (CLAYTON), MISSOURI 63105
914 Clayton Inn Office Bldg. — 230 South
SAN FRANCISCO, CALIFORNIA 94104
44 Montgomery Street — Wells Fargo Building
SEATTLE, WASHINGTON 98104
457 Central Building — 810 Third Avenue
TULSA, OKLAHOMA 74103
1204 Philtower Building — 427 South Boston
YOUNGSTOWN, OHIO 44512
7655 Market Street Extension

**THE FOLLOWING
IS/ARE THE BEST
IMAGES FROM POOR
QUALITY ORIGINAL(S)**

**IMAGE
DATA**

CHEMICAL REQUIREMENTS

TENSILE REQUIREMENTS

120

1/4" - 16"
E.S. and XX
No specific chemical requirements listed except that steel for welded pipe shall be of soft weldable quality.

No physical properties specified.

53

		Phosphorus Max. %	Sulfur Max. %
1/4" - 24" E.S. and XX Schedules through 160	TYPE S, SEAMLESS Open-hearth or basic-oxygen	0.048	0.060
	Bessemer	0.11	0.060
	TYPE F, BUTTWELDED Open hearth, basic-oxygen, or electric-furnace	0.08	0.060
	Bessemer	0.13	0.060
	TYPE E, ELECTRIC-RESISTANCE-WELDED Open-hearth or basic-oxygen	0.050	0.060

	Tensile Strength Min., psi	Yield Point Min., psi
TYPE S, SEAMLESS or TYPE E, ELECTRIC-RESISTANCE-WELDED		
Grade A	48,000	30,000
Grade B	60,000	35,000
TYPE F, BUTTWELDED		
Acid-bessemer	50,000	30,000
Open-hearth, basic-oxygen or electric-furnace	45,000	25,000

-106

	Grade A	Grade B	Grade C
1/4" - 26" E.S. and XX through 160			
Carbon, max., percent	0.25	0.30	0.35
Manganese, percent	0.27 to 0.93	0.29 to 1.06	0.29 to 1.06
Phosphorus, max., percent	0.048	0.048	0.048
Sulfur, max., percent	0.058	0.058	0.058
Silicon, min., percent	0.10	0.10	0.10

Grade C is a special product supplied only on agreement between the manufacturer and the purchaser.

	Tensile Strength Min., psi	Yield Point Min., psi
GRADE A	48,000	30,000
GRADE B	60,000	35,000
GRADE C	70,000	40,000

PI 5-L

	CARBON Max.	MANGANESE Min. Max.	PHOSPHORUS Max.	SULFUR Max.
1/4" - 44" E.S. and XX	ELECTRIC-FURNACE, OPEN-HEARTH or BASIC-OXYGEN			
	Acid-bessemer	0.22	0.90	0.04
	Basic-oxygen	0.22	1.15	0.04
	Electric-furnace or submerged-arc weld	0.21	0.90	0.04
	Grade A	0.24	1.15	0.04
	Grade B	0.24	1.15	0.04
	Grade C	0.24	1.15	0.04
	Grade D	0.24	1.15	0.04
	Grade E	0.24	1.15	0.04
	Grade F	0.24	1.15	0.04
	Grade G	0.24	1.15	0.04
	Grade H	0.24	1.15	0.04
	Grade I	0.24	1.15	0.04
	Grade J	0.24	1.15	0.04
	Grade K	0.24	1.15	0.04
	Grade L	0.24	1.15	0.04
	Grade M	0.24	1.15	0.04
	Grade N	0.24	1.15	0.04
	Grade O	0.24	1.15	0.04
	Grade P	0.24	1.15	0.04
	Grade Q	0.24	1.15	0.04
	Grade R	0.24	1.15	0.04
	Grade S	0.24	1.15	0.04
	Grade T	0.24	1.15	0.04
	Grade U	0.24	1.15	0.04
	Grade V	0.24	1.15	0.04
	Grade W	0.24	1.15	0.04
	Grade X	0.24	1.15	0.04
	Grade Y	0.24	1.15	0.04
	Grade Z	0.24	1.15	0.04

	Tensile Strength Min., psi	Yield Strength Min., psi
SEAMLESS, ELECTRIC WELDED or BUTTWELDED		
Grade A-25	45,000	25,000
SEAMLESS, ELECTRIC WELDED or SUBMERGED-ARC WELDED		
Grade A	48,000	30,000
Grade B	60,000	35,000

GENERAL INFORMATION

A-120

Sizes 1/2" - 16"
Std., E.S. and XX

COUPLINGS

Applied handling tight (approximately 1 1/2 threads beyond hand tight position). Couplings 2" and smaller are straight tapped. Other sizes taper tapped. When XS or XXS pipe is ordered with threads and couplings, taper tapped recessed couplings are furnished.

THREADS

To USAS Standard B2.1.

A-53

Sizes 1/2" - 24"
Std., E.S. and XX
USA Schedules
10 through 160

COUPLINGS

Same as A-120

END FINISH

PLAIN ENDS BEVELED

STD, XS or walls .500" thick or less

PLAIN ENDS SQUARE CUT

All XXS and walls heavier than .500"

A-106

Sizes 1/2" - 28"
Std., E.S. and XX
USA Schedules
10 through 160

Unless otherwise specified, pipe shall be furnished with plain ends.
All burrs at the ends of the pipe shall be removed.
Surface finish standards are outlined in the specification.

API 5-L

Sizes 1/2" - 44"
Std., E.S. and XX

COUPLINGS

All sizes are taper tapped recessed. Applied handling tight. It is intended that couplings be removed for cleaning and inspecting threads and applying fresh thread compound before use, especially in gas lines.

THREADS

To API Std. 5 B

END FINISH — unless otherwise ordered

2 1/4" OD and larger (other than XXS), Plain ends beveled, 30 degrees.
Double extra strong, square-cut ends.

SPECIAL NOTE: Specification applies to the following grades:

SUMMARY OF FEDERAL PIPE SPECIFICATIONS

WW-P-406b (Comparable to ASTM A-120)

Covers black and galvanized, welded and seamless pipe for ordinary uses in steam, water, gas, oil and air lines. Intended primarily to cover pipe furnished from warehouse stocks. Not intended for close coiling, bending, or high-temperature service.

Weight Designations

Weight A - Standard Weight

Weight B - Extra Strong

Weight C - Double Extra Strong

Class Designations

Class 1 - Black

Class 2 - Galvanized

Preservation and Packaging

Level A - To Military Standard

Level B - To Military Standard

Level C - Commercial Practice

Black Pipe shall be furnished unless otherwise specified.

WW-P-404c (Comparable to ASTM A-53)

Covers black and galvanized, welded and seamless pipe for flanging, bending and coiling. Buttwelded pipe is not intended for flanging.

CLASS DESIGNATIONS

	BUTTWELD	SEAMLESS		ELECTRIC WELD	
		Grade A	Grade B	Grade A	Grade B
STD. WT.	A53 BW	A53A S	A53B S	A53A ERW S	A53B ERW S
XS WT.	A53 BW XS	A53A XS	A53B XS	A53A ERW XS	A53B ERW XS
XXS WT.	A53 BW XXS	A53A XXS	A53B XXS	A53A ERW XXS	A53B ERW XXS

SPECIAL NOTES:

Both 406B and 404C require that, unless otherwise specified, 3" Standard shall be 28.55%; 10", 40.48%; and 12", 49.56%. WW-P-404C requires Government inspection and also continuous identification marking of electric-weld and seamless pipe.

LENGTHS

A-120

Sizes 1/2" - 16"
Std., E.S. and XX

STD

Single random, 16' - 22' — 5% may be jointers (two pieces coupled together). If Plain Ends — 5% may be 12' - 16' long.

XS and XXS

Single random, 12' - 22' — 5% may be 6' - 12' long.

STD and XS — Double Random Lengths

Shortest length 22', minimum average for order 35' long.

A-53

Sizes 1/2" - 24"
Std., E.S. and XX
USA Schedules
10 through 160

LIGHTER than XS wall thicknesses

Single random, 16' - 22' — 5% of threaded lengths may be jointers (two pieces coupled together). If plain ends — 5% may be 12' - 16' long.

XS and HEAVIER wall thicknesses

Single random, 12' - 22' — 5% may be 6' - 12' long.

XS and LIGHTER — Double Random Lengths

Shortest length 22', minimum average for order 35' long.

A-106

Sizes 1/2" - 26"
Std., E.S. and XX
USA Schedules
10 through 160

Lengths required shall be specified on order. No "jointers" permitted unless otherwise specified.

If no definite lengths required, following practice applies:

Single random, 16' - 22' — 5% may be 12' - 16'.

Double random, Minimum Length 22', Minimum average 35' — 5% may be 16' - 22'.

API 5-L

Sizes 1/2" - 44"
Std., E.S. and XX

THREADED AND COUPLED

S.R.L.
D.R.L.

Shortest Length in Entire Shipment
16' - 0"
22' - 0"

Shortest Length in 95% of Entire Shipment
18' - 0"
—

Min. Average Length in Entire Shipment
—
35' - 0"

PLAIN ENDS

S.R.L.
D.R.L.

As agreed upon
length in shipment

40% of average
agreed upon

Shortest Length in 98% of Entire Shipment
9' - 0"
14' - 0"

26' - 3"

75% of average
agreed upon

17' - 6"
35' - 0"

ON EACH LENGTH

(on tags attached to each bundle in case of bundled pipe)

ROLLED, STAMPED or STENCILED

Name or brand of manufacturer

ASTM A-120

Length of pipe

ROLLED, STAMPED or STENCILED

Name or brand of manufacturer

Kind of pipe, i.e., butt welded, EW A, Seamless B, etc.

XS for extra strong

XXS for double extra strong

ASTM A-53

Length of pipe

Also necessary to indicate when electric-furnace, basic-oxygen or acid-bessemer steel is used.

Manufacturer's name or brand

ASTM A-106 A, A-106 B, or A-106 C

Hydrostatic Test Pressure

Length of Pipe

Schedule number

Symbol "S", if conforms to supplementary requirements

Weight per foot (5" and larger)

Manufacturer's name or mark

API Monogram

Size

Weight per foot (4 1/2" OD and larger)

GRADE (Symbols A or B)

Process of manufacturer — Symbols

Seamless (S), Electric-Welded or Submerged-arc welded (E), Buttwelded (F)

Type of steel, if Electric-furnace (E), Bessemer

Grade B (B) or Rephosphorized steel, Class II (R)

Length

Test pressure, if other than listed in tables

NOTE — D.S. = die-stamped

Size:
2 1/2" - 12 1/2" OD

D.S.
D.S.
P.S.
P.S.
D.S. & P.S.

Size:
14" OD and larger

P.S.
P.S.
P.S.
P.S.
P.S.

D.S. & P.S.

D.S. & P.S.

P.S.

P.S.

P.S.

NOTE: Cold die-stamped markings of pipe with wall

MECHANICAL TESTS SPECIFIED

NUMBER OF TESTS REQUIRED

A-120

Sizes ½" - 16"
Std., E.S. and XX

No mechanical tests specified.

WEIGHT OF ZINC COATING TEST — A stripping test is required on two specimens approximately 4" long cut from each end of one length selected at random from each lot of 500 lengths or less of a size.

A-53

Sizes ½" - 24"
Std., E.S. and XX
USA Schedules
10 through 160

TENSILE TEST

Transverse tensile test required on sizes 8" and larger.

BEND TEST — 2" pipe size and smaller.

A sufficient length of pipe bent cold 90 degrees around a mandrel with a diameter of 12 times nominal diameter of pipe. If for close coiling, bent cold 180 degrees around a mandrel with a diameter of eight times nominal diameter of pipe.

XXS pipe, 1½" and over, not subject to bend test.

FLATTENING TEST

On 2½" and larger STD and XS pipe.
Not required on XXS pipe.

TYPE S, SEAMLESS and TYPE F, BUTTWELDED

Tensile, bending and flattening tests required on one length of pipe from each lot of 500 or fraction thereof for each size.

TYPE E, ELECTRIC-RESISTANCE-WELDED

Tensile and bending test required on one length of pipe from each lot of 500 or fraction thereof for each size. Flattening test required on both crop ends cut from each length of pipe. When produced in multiple lengths, flattening test required on crop ends from front and back of coil and two additional intermediate rings from each coil.

A-106

Sizes ½" - 26"
Std., E.S. and XX
USA Schedules
10 through 160

TENSILE TEST

All sizes - either transverse or longitudinal acceptable.

BEND TEST — 2" pipe size and smaller.

A sufficient length of pipe bent cold 90 degrees around a mandrel with a diameter of 12 times nominal diameter of pipe. If for close coiling, bent cold 180 degrees around a mandrel with a diameter of eight times nominal diameter of pipe.

FLATTENING TEST — 2½" pipe size and larger.

TENSILE

On one length
from each lot of

5" and smaller
6" and larger

400 or less
200 or less

BENDING

2" and smaller

400 or less

FLATTENING

2½" - 5"
6" and larger

400 or less
200 or less

API 5-L

Sizes ½" - 44"
Std., E.S. and XX

TENSILE TEST

Seamless and butt welded — all sizes — or, longitudinal specimens.

Electric-welded — 5½" OD and smaller — on longitudinal specimens.

Electric-welded and submerged-arc welded — 8½" OD and larger — on transverse specimens.

BEND TEST

2½" OD and smaller butt weld — appropriate length of pipe bent cold through 90 degrees around a mandrel not greater than 12 times outside diameter of pipe being tested. Weld located at nine (or three o'clock) from point of contact with mandrel.

FLATTENING TEST

TENSILE

5½" OD and smaller
6½" OD through 12½" OD
14" OD and larger

For multiple length seamless pipe, a length shall be considered as all sections cut from a particular multiple length.

BENDING

2½" OD and smaller B.W.

On one length from
each lot of

400 or Less
200 or Less
100 or Less

FLATTENING (ELECTRIC-WELD — all sizes)

Non-expanded single lengths — crop ends from each end of each length.

Non-expanded multiple lengths — crop ends from each end of each multiple length, plus two intermediate rings.

Cold-expanded — on ring cut from one end of a length from each lot of 100 lengths or less

FLATTENING (BUTTWELD — 2½" OD and larger)

One ring cut from one end of a length from each lot of 100 lengths or less

400 or Less

-120

is $\frac{1}{8}$ " - 16" OUTSIDE DIAMETER at any point shall not vary more than:

, E.S. and XX

	Over	Under
For $1\frac{1}{2}$ " and smaller	$1/64$ "	$1/32$ "
For 2" and larger	1%	1%

Minimum wall thickness at any point shall not be more than 12.5% under nominal wall thickness specified.

Specification contains a table of minimum wall thicknesses on inspection calculated as follows:

$$\text{Nominal wall} \times 0.875 = \text{minimum wall}$$

-53

is $\frac{1}{8}$ " - 24"

Same as A-120

, E.S. and XX

A Schedules

through 160

Same as A-120

-106

is $\frac{1}{8}$ " - 26"

OUTSIDE DIAMETER shall not exceed variations as listed below:

, E.S. and XX

A Schedules

through 160

Nominal Pipe Size	Over	Under
$\frac{1}{8}$ " - $1\frac{1}{2}$ "	$1/64$ (0.015)	$1/32$ (0.031)
2" - 4"	$1/32$ (0.031)	$1/32$ (0.031)
5" - 8"	$1/16$ (0.062)	$1/32$ (0.031)
10" - 18"	$3/32$ (0.093)	$1/32$ (0.031)
20" - 24"	$1/8$ (0.125)	$1/32$ (0.031)

Same as A-120

PI 5-L

OUTSIDE DIAMETER at any point shall not vary more than:

is $\frac{1}{8}$ " - 44"

, E.S. and XX

Pipe Body	Tolerance	
1.900" OD and smaller	Plus 0.016"	Minus 0.031"
2 $\frac{3}{4}$ " through 4" OD	Plus 1%	Minus 1%
4 $\frac{1}{2}$ " through 18" OD	Plus $\frac{3}{8}$ %	Minus $\frac{3}{8}$ %
20" OD and larger	Plus 1%	Minus 1%

PIPE ENDS (distance of 4" from each end)

Size	Max. Under	Max. Over
10 $\frac{3}{4}$ " OD and smaller	$1/64$ "	$1/16$ "
12 $\frac{3}{4}$ " OD - 20" OD	$1/32$ "	$3/32$ "
22" OD and larger	$1/32$ "	$3/32$ "

OUT-OF-ROUNDNESS (distance of 4" from each end)

22" OD and larger - max. 1% larger. Max. 1% smaller than tabulated.

Wall thickness at any point shall be within tolerances specified as follows:

SEAMLESS PIPE

2 $\frac{1}{2}$ " OD and smaller
3 $\frac{1}{2}$ " OD
4" OD and larger

Max. Over:
20%
18%
15%

Max. Under:
12 $\frac{1}{2}$ %
12 $\frac{1}{2}$ %
12 $\frac{1}{2}$ %

WELDED PIPE

2 $\frac{1}{2}$ " OD and smaller:
3 $\frac{1}{2}$ " OD
4" OD through 18" OD
20" OD and larger

20%
18%
15%
17 $\frac{1}{2}$ %

12 $\frac{1}{2}$ %
12 $\frac{1}{2}$ %
12 $\frac{1}{2}$ %
10%

HYDROSTATIC TEST

PERMISSIBLE VARIATIONS IN WEIGHTS PER FOOT

10/28/82 11:28

CS114 255 4064

FORRER SUPPLY

0009

20

16" and XX

Prescribes hydrostatic inspection test pressures for standard, extra strong, and double extra strong pipe in pounds per square inch (psi). Each length of pipe must be tested AT THE PRODUCING MILL to the test pressure specified.

Welded pipe 2" and larger is jarred near one end while under test pressure.

For STD and XS

Pipe shall not vary more than $\pm 5\%$ from weights shown in tables.

For walls heavier than XS including XXS

Pipe shall not vary more than $\pm 10\%$ from weights shown in tables. Sizes 4" and smaller weighed in customary mill lifts. On larger sizes, weight tolerance is applicable to individual lengths.

3

24"

and XX

reduces

th 160

Hydrostatic inspection test pressures for plain end and threaded and coupled pipe are specified. Each length of pipe must be tested AT THE PRODUCING MILL.

Welded pipe 2" and larger is jarred near one end while under specified pressure.

Test pressures are held for not less than five seconds for all sizes of seamless and electric weld pipe.

MAXIMUM PRESSURES REQUIRED

Sizes 3" and under — 2,500 psi

Sizes over 3" — 2,800 psi

For KS and lighter wall thicknesses

Pipe shall not vary more than $\pm 5\%$ from weights shown in tables.

For walls heavier than XS

Pipe shall not vary more than $\pm 10\%$ from weights shown in tables. Sizes 4" and smaller weighed in customary mill lifts. On larger sizes, weight tolerance is applicable to individual lengths.

06

28"

and XX

edules

th 160

Hydrostatic test pressures are calculated using the Barlow formula to produce a stress in the pipe wall equivalent to 60% of specified minimum yield point, at room temperature. Each length of pipe must be tested AT THE PRODUCING MILL to the calculated or maximum pressure required.

Test pressures are held for not less than five seconds.

MAXIMUM PRESSURES REQUIRED

Sizes 3" and under — 2,500 psi

Sizes over 3" — 2,800 psi

For SCHEDULES 10 through 120

Pipe shall not vary more than 6.5% over and 3.5% under weights shown in USA Schedule B 36.10.

For pipe heavier than SCHEDULE 120

Pipe shall not vary more than 10% over and 3.5% under weights shown in USA Schedule B 36.10.

Unless otherwise agreed, sizes 4" and smaller are weighed in convenient lots. Pipe in sizes larger than 4" is weighed separately.

5-L

44"

and XX

Lists STANDARD and higher ALTERNATIVE hydrostatic mill inspection test pressures for all sizes covered by the specification. Fiber stress values for STANDARD test pressure are 60% of specified minimum yield strength. Stress values for ALTERNATIVE test pressure are 75% of specified minimum yield strength.

Each length of pipe must be tested. Welded pipe is struck while under pressure with a 25 hammer or its equivalent near the weld at both ends of the pipe.

Test pressures are held for not less than:

Seamless Pipe — all sizes — 5 seconds

Welded pipe — 18" and smaller — 5 seconds

For STD, REGULAR, XS and XXS weights

Pipe shall not vary more than 10% over and 3 1/2% under weights shown in tables.

For SPECIAL PLAIN ENDS weights

Pipe shall not vary more than 10% over and 5% under weights shown in tables.

For CARLOAD (40,000) LOTS

Weight of total pipe in car shall be not less than 1.75% under the calculated (theoretical) weight of total footage in the car.

ICATION SCOPE

20

1/4" - 16"

S. and XX

Covers BLACK and hot-dipped GALVANIZED WELDED and SEAM-LESS nominal (average) wall pipe for ordinary uses in steam, water, gas and air lines. Pipe to this specification not intended for close coiling or bending, or high temperature service.

Specification is intended to cover pipe purchased mainly from distributor's stocks.

53

1/4" - 24"

S. and XX

Schedules

through 160

Covers BLACK and hot-dipped GALVANIZED WELDED and SEAM-LESS nominal wall pipe suitable for welding and for coiling, bending, flanging and other forming operations.

Butt-weld pipe (Type F) is not intended for flanging (roll back operation to form flange using pipe wall).

Order should specify when pipe is required for close coiling. (Grade A usually specified for close coiling or cold bending).

TYPES AND GRADES

Type F — furnace-butt-welded, continuous welded

Type E — electric-resistance welded, Grades A and B

Type S — Seamless, Grades A and B

106

Sizes 1/4" - 26"

S., E.S. and XX

SA Schedules

through 160

Covers SEAMLESS nominal (average) wall pipe (welded not permitted) for high-temperature service, suitable for bending, flanging and similar forming operations.

Sizes 1 1/2" and under may be either hot finished or cold drawn. Sizes 2" and larger shall be hot finished unless otherwise specified. Cold drawn pipe must be heat treated after final cold draw pass. Optional supplementary requirements are provided when pipe is intended for use for steam service pressures of 400 psi or over at high temperatures or other applications where a superior grade of pipe is required.

KINDS OF STEEL PERMITTED FOR PIPE MATERIAL

Open-hearth
Electric-furnace
Basic-oxygen
Acid-oxygen
Acid-bessemer

Open-hearth
Electric-furnace
Basic-oxygen
Acid-bessemer

Killed open-hearth, basic-oxygen or electric-furnace

HOT-DIP GALVANIZING

Sets standards for zinc-coated (galvanized) pipe inside and outside by the hot-dip process.

Weight of zinc coating shall be not less than 1.8 oz. per square foot of surface (inside and outside) coated as determined from the average result of two specimens and not less than 1.6 oz. per square foot for either of the two specimens.

A single stripping operation is prescribed for determining weight of zinc coating.

Same as A-120

When galvanized pipe is bent or otherwise fabricated to a degree which causes zinc coating to stretch or compress beyond the limit of elasticity, some flaking of the coating may occur.

Not applicable to A-106 pipe.

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FORER SUPPLY

API 5-L

Sizes 1/4" - 44"

Std., E.S. and XX

Covers WELDED and SEAMLESS LINE pipe suitable for use in conveying gas, water and oil in both the oil and natural gas industries.

SEAMLESS & ELECTRIC WELD

Grade A-25 Class I

Grade A-25 Class II

Grade A

Grade B

SUBMERGED-ARC WELD

Grade A

Electric-furnace,
Open-hearth or
Basic-oxygen

Killed
Deoxidized
Basic-Bessemer

Killed
Deoxidized
Acid-Bessemer

x

x

x

x

x

x

x

No.	Dose	UPPER PART OF FORELIMB		LOWER PART OF FORELIMB		UPPER PART OF HINDLIMB		LOWER PART OF HINDLIMB		OTHER		Total
		Weight	Volume	Weight	Volume	Weight	Volume	Weight	Volume	Weight	Volume	
1/4	.405			.068	.048			.085	.088			
1/4	.540			.089	.088			.119	.119			
1/4	.675			.081	.081			.126	.126			
1/4	.840			1.02	.108			.147	.147			.188
1/4	1.050			1.13	1.13			1.54	1.54			.219
1	1.319			1.33	1.33			2.17	2.17			.250
1 1/4	1.680			1.40	1.40			3.01	3.01			.260
1 1/4	1.900			1.48	1.48			3.63	3.63			.281
2	2.375			1.54	1.54			5.03	5.03			.318
2 1/4	2.875			2.03	2.03			7.66	7.66			.375
3	3.500			2.16	2.16			10.29	10.29			.438
3 1/4	4.000			2.28	2.28			12.81	12.81			.511
4	4.800			2.37	2.37			14.98	14.98			.674
5	5.542			2.58	2.58			20.78	20.78			.829
6	6.628			3.10	3.10			28.87	28.87			.964
8	8.625			3.22	3.22			38.66	38.66			1.000
10	10.780			3.45	3.45			50.00	50.00			1.04.13
12	12.750			3.78	3.78			68.88	68.88			1.312
14	14			3.75	3.75			75.00	75.00			1.438
16	16			3.78	3.78			84.44	84.44			1.584
18	18			3.75	3.75			93.88	93.88			1.781
20	20			3.75	3.75			104.13	104.13			1.989
22	22			3.75	3.75			114.81	114.81			2.123
24	24			3.75	3.75			125.00	125.00			2.344

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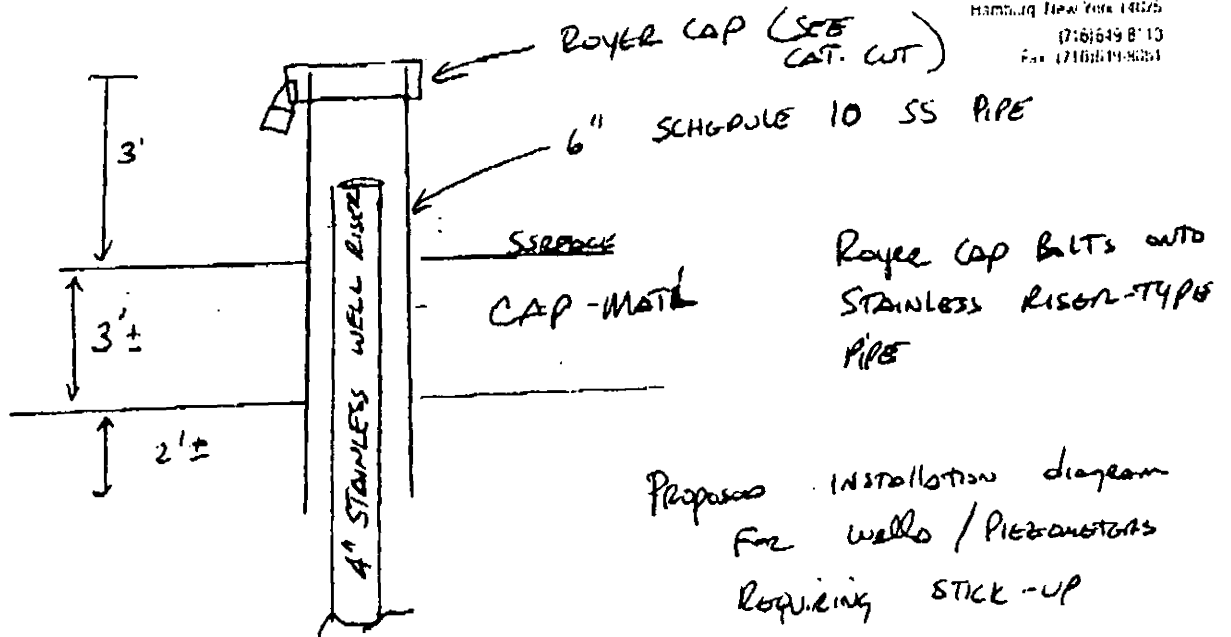
**MONITORING WELL, PIEZOMETER,
AND PIPE SLEEVE COVERS**

Huntingdon

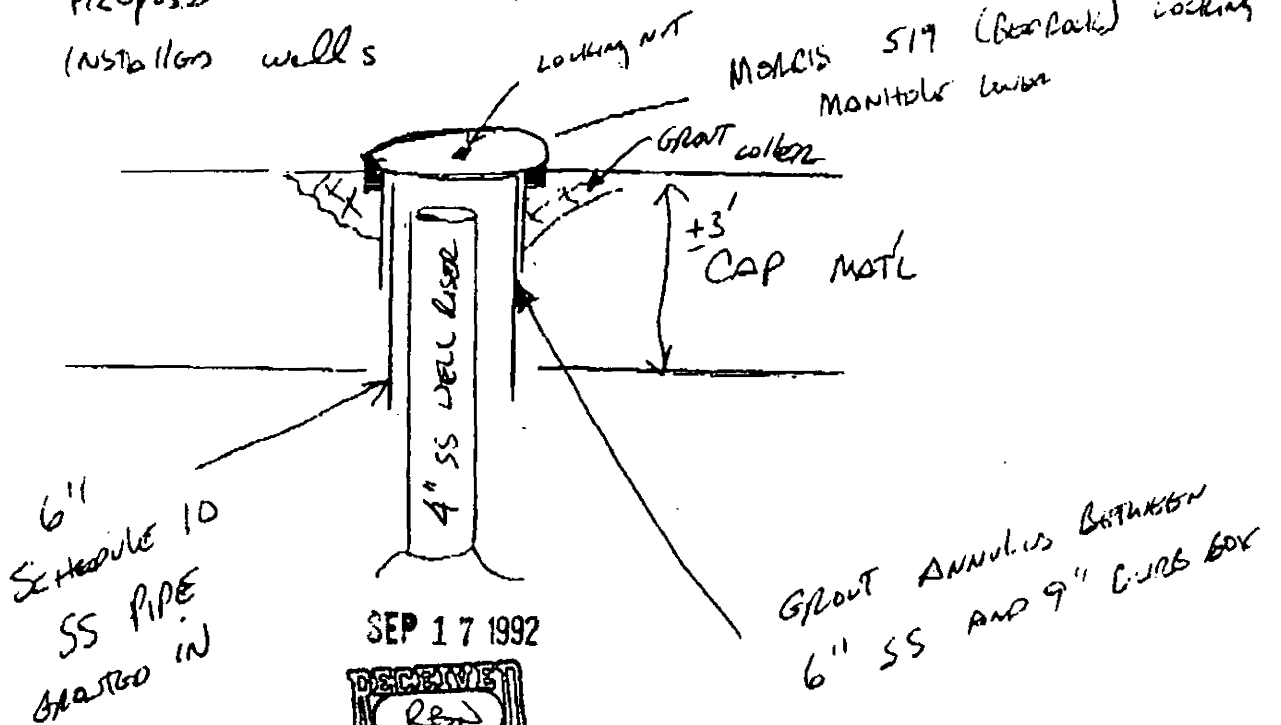
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Fax (716) 649-8004

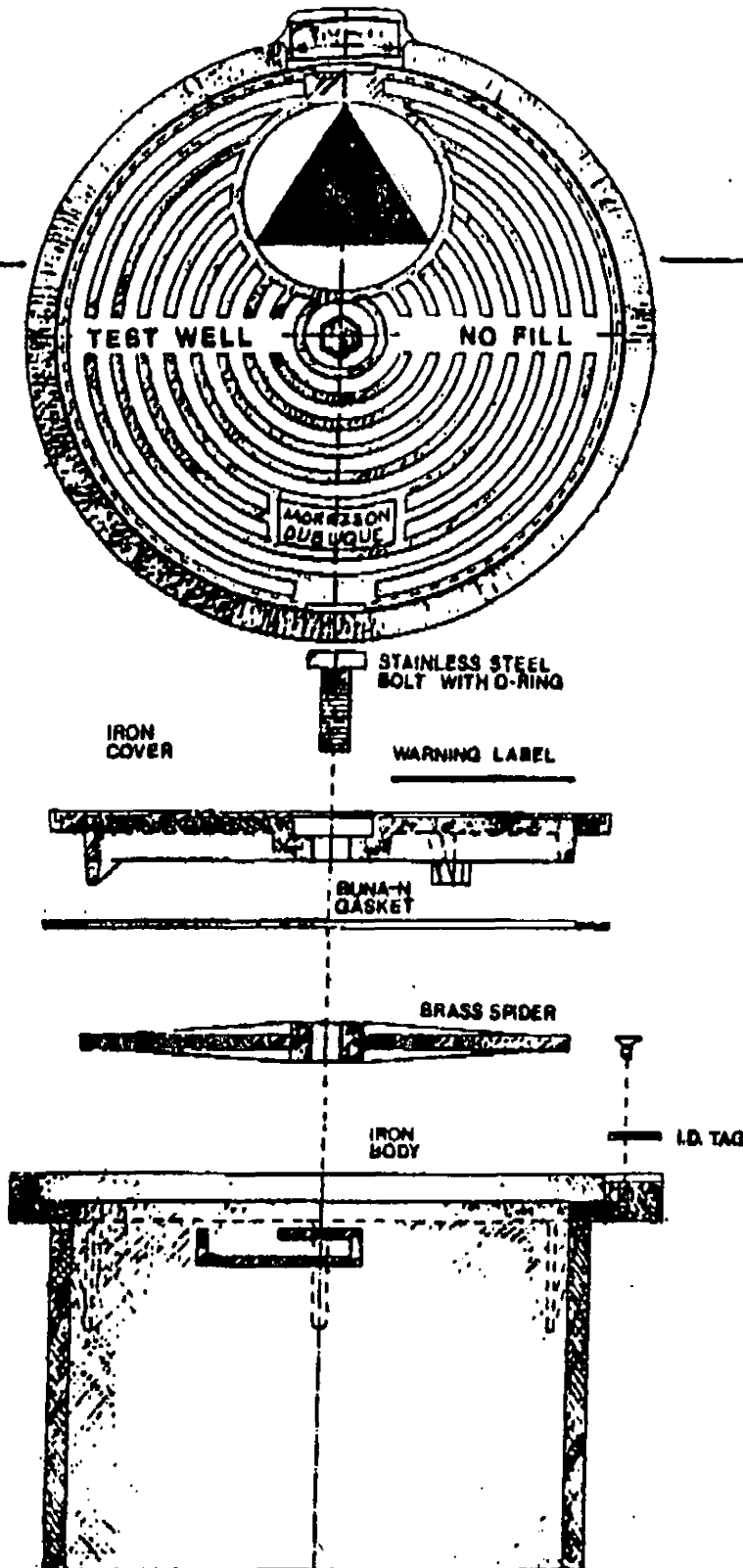


PROPOSED INSTALLATION DIAGRAM FOR FLUSH MOUNT (CURB BOX) INSTALLATION WELLS



BEDROCK ENTERPRISES, INC.

9"- 519 Watertight Manhole for Monitoring/Observation Wells



1. Unit consists of an all cast iron body 9" dia. by 7 1/2" deep, cast iron lid, and brass spider (hold down device).
2. This manhole is designed to be set into a concrete slab. A stainless steel bolt (with built in O-ring seal) screws down into the spider drawing the lid and recessed gasket tight to the body flange.
3. Spider is removable for full 9" diameter access. Bolt is a standard 3/4" hex head.
4. Each unit comes with a small 7/8" manhole wrench. A std. socket wrench may also be used to open this manhole.
5. Unit comes complete with a bold (fade resistant) API approved warning symbol permanently mounted and recessed into the lid and brass I.D. tag for stamping well number on the rim.
6. 32 lbs. each
48 manholes per pallet

We have a complete line of manholes and well tops in stock call us for additional information:

BEDROCK
ENTERPRISES, INC.

P.O. BOX 747

Forked River, N.J. 08731

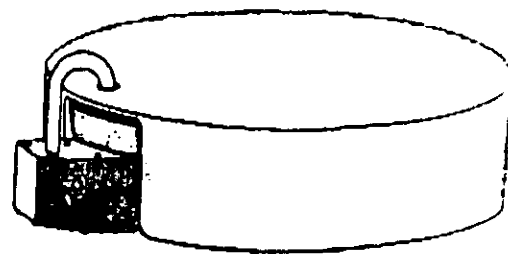
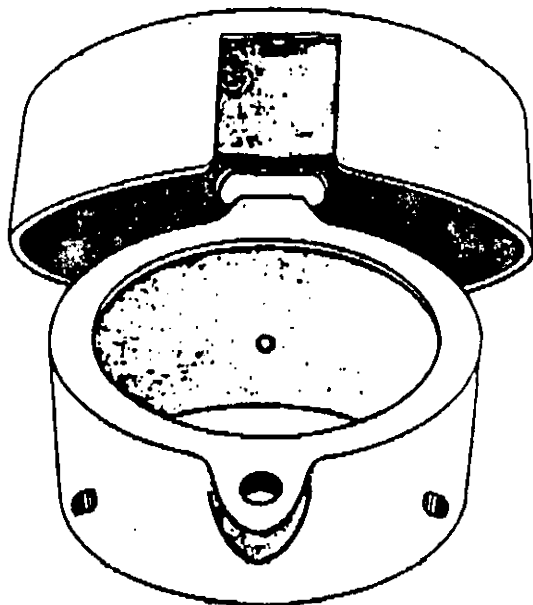
Ph. (809) 693-9434 Fax (609) 871-8708

Locking Well Cap

Well Casing Cover Cap (Aluminum)

PREVENTS VANDALISM

IDEAL FOR MONITORING WELLS

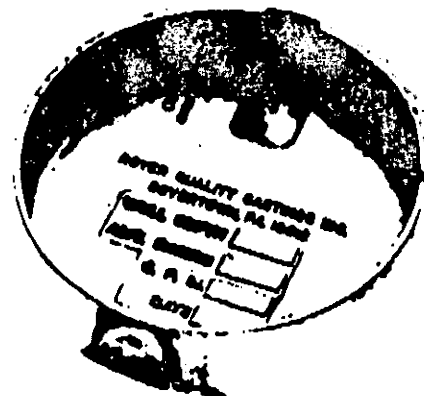


FIVE SIZES AVAILABLE

NEW FEATURE • At no additional Cost
PERMANENT WELL LOG PAD RECORDS ★ Well Depth

- ★ Amount of casing
- ★ Gallons per minute
- ★ Date

Use 3/16" Punch Set
 Pad cast on inside of cap.



NO - MINIMUM ORDER REQUIRED FOR LOCKING CAPS

AVAILABLE • At a small additional cost.

PERSONALIZED IMPRINTING

YOUR - Name, Phone and Address cast as illustrated
 for a small additional charge per cap in addition to the
 plain cap price.

MINIMUM ORDER FOR IMPRINTED CAPS 50
 A 10% deviation of order possible on imprinted caps.

IT'S SMART ADVERTISING

AND IDENTIFICATION

ETNA Pumps
 BATAVIA Pumps
 CLARKE
 SUPPLY
 JAMES
 DENSEY
 PIPE

ROYER QUALITY CASTINGS INC.
 WARWICK STREET
 BOYERTOWN PA. 19012
 PHONE 215-369-1304

SOLD IN U.S.A. AND CANADA

For additional information see your wholesaler or write
 direct for free catalog.

ROYER QUALITY CASTINGS, INC.

380 S. Reading Ave. (Rear)
 Boyertown, PA. 19012 USA
 Phone: 215-369-1304

SIZES AVAILABLE

Order all sizes by O.D. of casing
 Well Cap or Regular Well Cap

ID.	O.O.	ORDER O.D.
CASING OR PIPE	CASING OR PIPE	WELL CAP SIZE
4"	4 1/2"	3 1/2"
6"	6 1/2"	5 1/2"
8"	8 1/2"	7"
10"	10 3/4"	9 1/2"

**CORRUGATED METAL CULVERT
PIPE AND FLAP GATE**

P1-0129

SUBMITTAL 28QC18
CONTRACT NO. C91028-003-01
CORRUGATED METAL CULVERT PIPE & FLAP GATE
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

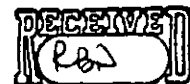
Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

AUG 12 1992

Prepared By:



GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

Flap Gate

Attatched are specifications for the Contech Model 10C Flap Gate herein submitted as an equal to the Neenah catalog R-5050 series flap gate specified in the contract drawings.

Corrugated Metal Culvert Pipe

Attatched are specifications for the 42" diameter corrugated metal culvert pipe. Proposed for use is a full-round, galvanized steel, 16 gauge pipe with 2 2/3" x 1/2" helical corrugations.

MODEL 10C FLAP GATE

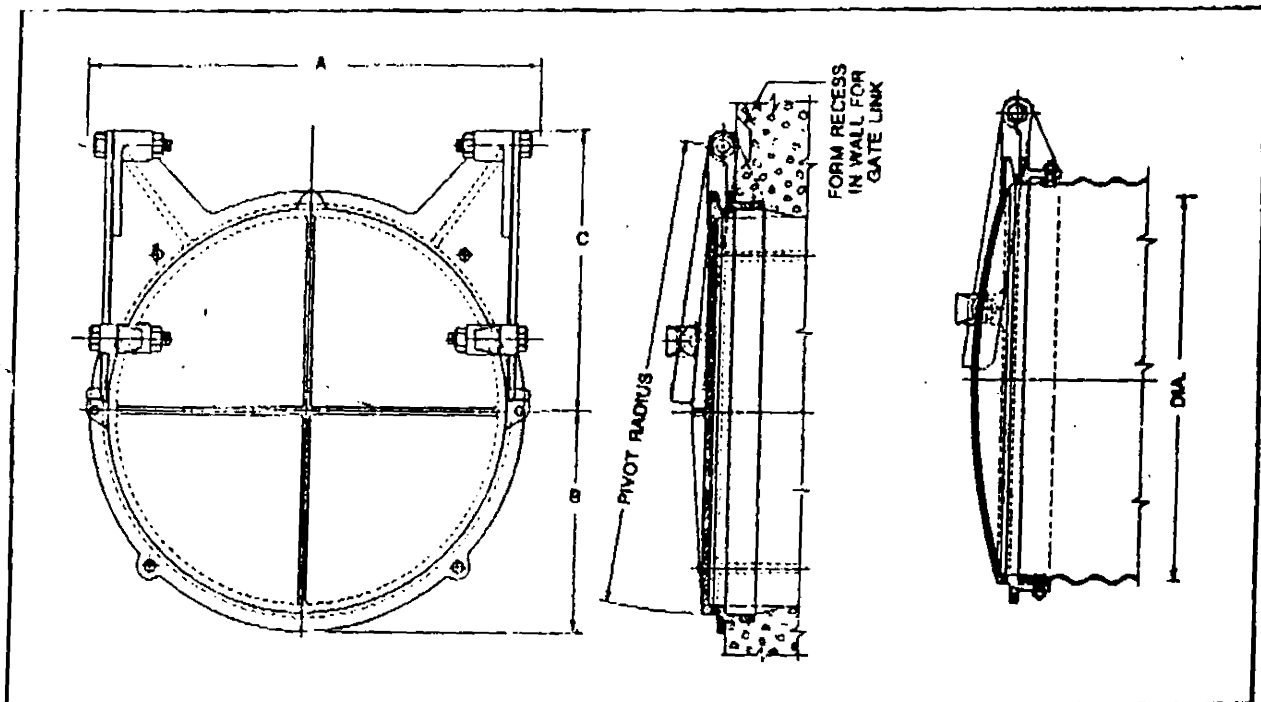
- For seating heads to 10 feet
- Round opening
- Spigot back
- Cast Iron seating surfaces

The Model 10C flap gate consists of the simplest possible design with double hinge action for heads to 10 feet. Pivot points are stationary. Ring and flap are of cast iron with galvanized steel hinge arms and assembly bolts and bronze bushings. Extension of the cast iron bosses of the flap over the top of the pivot arms limits the double hinge action, and prevents the bottom of the flap from folding inside the ring and wedging the gate in the open position.

This gate is made only in spigot

back and normally attaches to corrugated steel pipe. The spigot back gate may be embedded in the concrete at the time it is poured; however, a flat back gate anchored and then grouted to the wall is recommended. See "Medium Duty Gates" for this application.

This gate opens under a minimum head differential, yet is positive closing under a few inches of water on the face of the gate. A lifting eye is cast integrally with the flap to permit manual operation.



(All Dimensions in Inches)

SIZE	A*	B	C	PIVOT RADIUS
6	8.75	3.75	4.75	7.50
8	10.75	5.00	6.50	10.25
10	12.75	6.25	8.00	12.50
12	15.25	7.25	9.25	15.00
15	18.75	9.00	11.50	18.50
18	21.75	10.50	13.75	22.25
21	24.75	12.25	16.00	26.00
24	27.75	13.75	18.00	29.75
30	34.25	17.00	21.75	36.25
36	41.50	20.50	26.25	43.75
42	47.50	23.50	31.00	51.50
48	54.00	27.00	35.50	58.75

*Maximum width of gate may occur at top or on horizontal center line. "A" dimension is shown for maximum horizontal width of gate.

SPECIFICATIONS FOR MODEL 10C FLAP GATE

General

Flap gates shall be Hydro Model 10C or approved equal. Similar installations shall have operated successfully for five years or more. All component parts shall be of the type material shown in the Materials section of this specification.

Seal

The spigot back seat shall be one-piece cast iron with a raised section around the perimeter of the waterway to provide the seating face. The seat shall be shaped to provide two pivot bosses extended above the top of the waterway opening.

Cover

The cover shall be one-piece cast iron with pivot point bosses, a lifting eye and a reinforced section around the perimeter of the waterway opening. Pivot bosses shall be designed to limit the double hinge action, preventing the cover from rotating sufficiently to become wedged in the open position.

Seating Faces

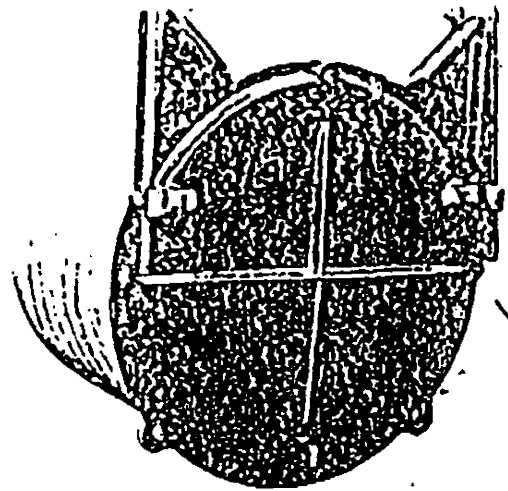
The cast iron seating faces of the seat and cover shall be machined to a plane with a minimum 63 micro-inch finish.

Links

The links connecting the cover and the upper pivot bosses shall be one-piece galvanized steel and of sufficient section to safely withstand the normal forces encountered during gate operation. Each link shall be provided with a commercial grade bronze bushing at the pivot points.

Fasteners

All anchor bolts, assembly bolts and nuts shall be galvanized steel and of ample section to safely withstand forces created by operation of the gate.



shown in the Gate Schedule. Quantity and size of the fasteners shall be as recommended by the manufacturer. Anchor bolts shall be furnished with two nuts each to install gates attached to concrete.

Painting

Exposed machined or bearing surfaces shall be coated with a water-resistant rust preventive compound. All assembled units shall be shop painted in accordance with the manufacturer's standard practice.

dance with the manufacturer standard practice.

Installation

Installation of the flap gates shall be done by the contractor in workmanlike manner in accordance with the manufacturer's instructions.

Materials

Materials shall conform to the requirements of the following ASTM Standards.

CAST IRON

A 126, Class B

GALVANIZED STEEL (Fasteners)

A 307 (Bolts)

A 164 (Galvanized Coating)

GALVANIZED STEEL

A 36 or A 306 (Carbon Steel)

A 123 (Galvanized Coating)

GATE SCHEDULE

QUANTITY REQUIRED	SIZE OPENING	SEATING HEAD	REMARKS

2²/₃" x 1¹/₂" Height-of-Cover Limits for Corrugated Steel Pipe

H 20 and H 25 Live Load

Diagonal or Span, inches	12	248	310			
12	12	248	310			
15		199	248			
18		166	207			
21		142	178	249		
24		124	155	218		
30		99	124	174		
36		83	103	145	186	
42		71	88	124	160	195
48		62	77	109	140	171
54			66	93	122	150
60				79	104	128
66				68	88	109
72					75	93
78						79
84	12					66

E 80 Live Load

Diagonal or Span, inches	12	248	310			
12	12	248	310			
15		199	248			
18		166	207			
21		142	178	249		
24		124	155	218		
30		99	124	174		
36		83	103	145	186	
42		71	88	124	160	195
48	12	62	77	109	140	171
54	18		66	93	122	150
60				79	104	128
66				68	88	109
72	18				75	93
78	24					79
84	24					66

H 20 and H 25 Live Load, Pipe-Arch

Diagonal or Span, inches	17 x 13	0.064	12	15
15	17 x 13	0.064	12	15
18	21 x 15	0.064		14
21	24 x 18	0.064		12
24	28 x 20	0.064		12
30	35 x 24	0.064		12
36	42 x 29	0.064		10
42	49 x 33	0.064		9
48	57 x 38	0.064		9
54	64 x 43	0.079		9
60	71 x 47	0.109		9
66	77 x 52	0.109		9
72	83 x 57	0.138	12	10

E 80 Live Load, Pipe-Arch

Diagonal or Span, inches	17 x 13	0.079	24	22
15	17 x 13	0.079	24	22
18	21 x 15	0.079		
21	24 x 18	0.109		
24	28 x 20	0.109		
30	35 x 24	0.138		
36	42 x 29	0.138		
42	49 x 33	0.138		
48	57 x 38	0.138		
54	64 x 43	0.138		
60	71 x 47	0.138	24	22

Notes for Pages 7 and 8

- These tables are for lock-seam or welded-seam construction. They are not for riveted construction. Consult your Contech Sales Engineer for height-of-cover tables on riveted pipe.
- The haunch areas of a pipe-arch are the most critical zone for backfilling. Extra care should be taken to provide good material and compaction to a point above the spring line.
- E 80 minimum cover is measured from top of pipe to bottom of tie.
- H 20 and H 25 minimum cover is measured from top of pipe to bottom of flexible pavement or top of rigid pavement.
- The H 20 and H 25 pipe-arch tables are based on 2 tons per Ft.² corner bearing pressures.
- The E 80 pipe-arch tables minimum and maximum covers are based on the corner bearing pressures shown. These values may increase or decrease with changes in allowable corner bearing pressures.
- 0.064" is 16 gage.
0.079" is 14 gage.
0.109" is 12 gage.
0.138" is 10 gage.
0.168" is 8 gage.

Approximate Weight/Foot Contech Corrugated Steel Pipe

(Estimated Average Weights—Not for Specification Use)

2 3/4" x 1/2" Corrugation

Outside Diameter, in.	Wall Thickness, in.	Weight, lb./ft.	Weight, lb./ft.	Weight, lb./ft.	Weight, lb./ft.	Weight, lb./ft.
12	0.052	8	10	13		
	0.064	10	12	15		
	0.079	12	14	17		
15	0.052	10	13	16	26	
	0.064	12	15	18	28	
	0.079	15	18	21	31	
18	0.052	12	16	19	31	
	0.064	15	19	22	34	
	0.079	18	22	25	37	
21	0.052	14	18	23	36	
	0.064	17	21	26	39	
	0.079	21	25	30	43	
24	0.052	15	20	26	41	65
	0.064	19	24	30	45	69
	0.079	24	29	35	50	77
	0.109	33	38	44	59	
30	0.052	20	26	32	51	82
	0.064	24	30	36	55	87
	0.079	30	36	42	60	96
	0.109	41	47	53	72	
36	0.052	24	31	39	50	98
	0.064	29	36	44	65	104
	0.079	36	43	51	75	116
	0.109	49	56	64	90	127
	0.138	62	69	77	100	
42	0.052	28	36	45	71	114
	0.064	34	42	51	77	121
	0.079	42	50	59	85	135
	0.109	57	65	74	100	149
	0.138	72	80	89	115	
48	0.064	38	48	57	85	138
	0.079	48	58	67	95	138
	0.109	65	75	84	112	154
	0.138	82	92	101	129	170
	0.168	100	110	119	147	186
54	0.079	54	65	76	105	156
	0.109	73	84	95	124	173
	0.138	92	103	114	143	191
	0.168	112	123	134	163	209
60	0.109	81	92	106	140	192
	0.138	103	114	128	162	212
	0.168	124	135	149	183	232
66	0.109	89	101	117	160	211
	0.138	113	125	141	180	233
	0.168	137	149	165	210	255
72	0.138	123	137	154	210	254
	0.168	149	163	180	236	278
78	0.168	161	177	194	260	302
84	0.168	173	190	208	270	325
90	0.168	186	204	224	289	348
96	0.168	198	217	239	309	371

3" x 1" or 5" x 1" Corrugation

Outside Diameter, in.	Wall Thickness, in.	Weight, lb./ft.	Weight, lb./ft.	Weight, lb./ft.	Weight, lb./ft.	Weight, lb./ft.
54	0.064	50	66	84	138	197
	0.079	61	77	95	149	207
	0.109	83	100	118	171	226
	0.138	106	123	140	194	245
	0.168	129	146	163	217	264
60	0.064	55	73	93	153	218
	0.079	67	86	105	165	229
	0.109	92	110	130	190	251
	0.138	118	136	156	216	272
	0.168	143	161	181	241	293
66	0.064	60	80	102	168	240
	0.079	74	94	116	181	252
	0.109	101	121	143	208	276
	0.138	129	149	171	236	299
	0.168	157	177	199	264	322
72	0.064	66	88	111	183	262
	0.079	81	102	126	197	275
	0.109	110	132	156	227	301
	0.138	140	162	186	257	326
	0.168	171	193	217	288	351
78	0.064	71	95	121	198	298
	0.079	87	111	137	214	326
	0.109	119	143	169	246	326
	0.138	152	176	202	279	353
	0.168	185	209	235	312	380
84	0.064	77	102	130	213	321
	0.079	94	119	147	230	351
	0.109	128	154	182	264	379
	0.138	164	189	217	300	379
	0.168	199	224	253	335	409
90	0.064	82	109	140	228	376
	0.079	100	127	158	246	406
	0.109	137	164	195	283	438
	0.138	175	202	233	321	
	0.168	213	240	271	359	
96	0.064	87	116	149	242	401
	0.079	107	136	169	262	433
	0.109	147	176	209	302	467
	0.138	188	217	250	343	
	0.168	228	257	290	383	
102	0.064	93	124	158	258	426
	0.079	114	145	179	279	460
	0.109	155	186	220	320	496
	0.138	198	229	263	363	
	0.168	241	272	306	406	
108	0.079	120	153	188	295	487
	0.109	165	198	233	340	525
	0.138	211	244	279	386	
	0.168	256	289	324	431	
114	0.079	127	162	199	312	514
	0.109	174	209	296	359	554
	0.138	222	257	294	407	
	0.168	271	306	343	456	
120	0.109	183	220	259	378	541
	0.138	234	271	310	429	583
	0.168	284	321	360	479	
126	0.138	247	285	326	452	
132	0.138	259	299	342	474	
	0.168	314	354	397	529	
138	0.138	270	312	357	495	
	0.168	328	370	415	553	
144	0.168	344	388	435	579	

CORRUGATED METAL PIPE
REFERENCE SPECIFICATIONS

GALVANIZED

	<u>AASHTO</u>	<u>ASTM</u>
Material	M-218	A-444
Pipe	M-36*	A-760*
Design	Section 12**	A-796
Installation	Section 26**	A-798
Asphalt Coating	M190 Type A	A849 A-1
Concrete Lined	-----	A849 C-3
Paved Invert	M190 Type B&C	A849 A-2
Smooth Flo	M190 Type D	A849 A-3

ALUMINIZED STEEL Type 2

Material	M-274	A-819
Pipe	M-36*	A-760*
Design	Section 12**	A-796
Installation	Section 26**	A-798

FIBER-BONDED

Material	-----	A-885
Pipe	-----	A-760*
Design	Section 12**	A-796
Installation	Section 26**	A-798
Paved Invert	M-190 Type B&C	A-849 A-2
Smooth Flo	M-190 Type D	A-849 A-3

*Type I - Round
Type II - Arch

**Reference AASHTO Standard Specifications for Highway Bridges

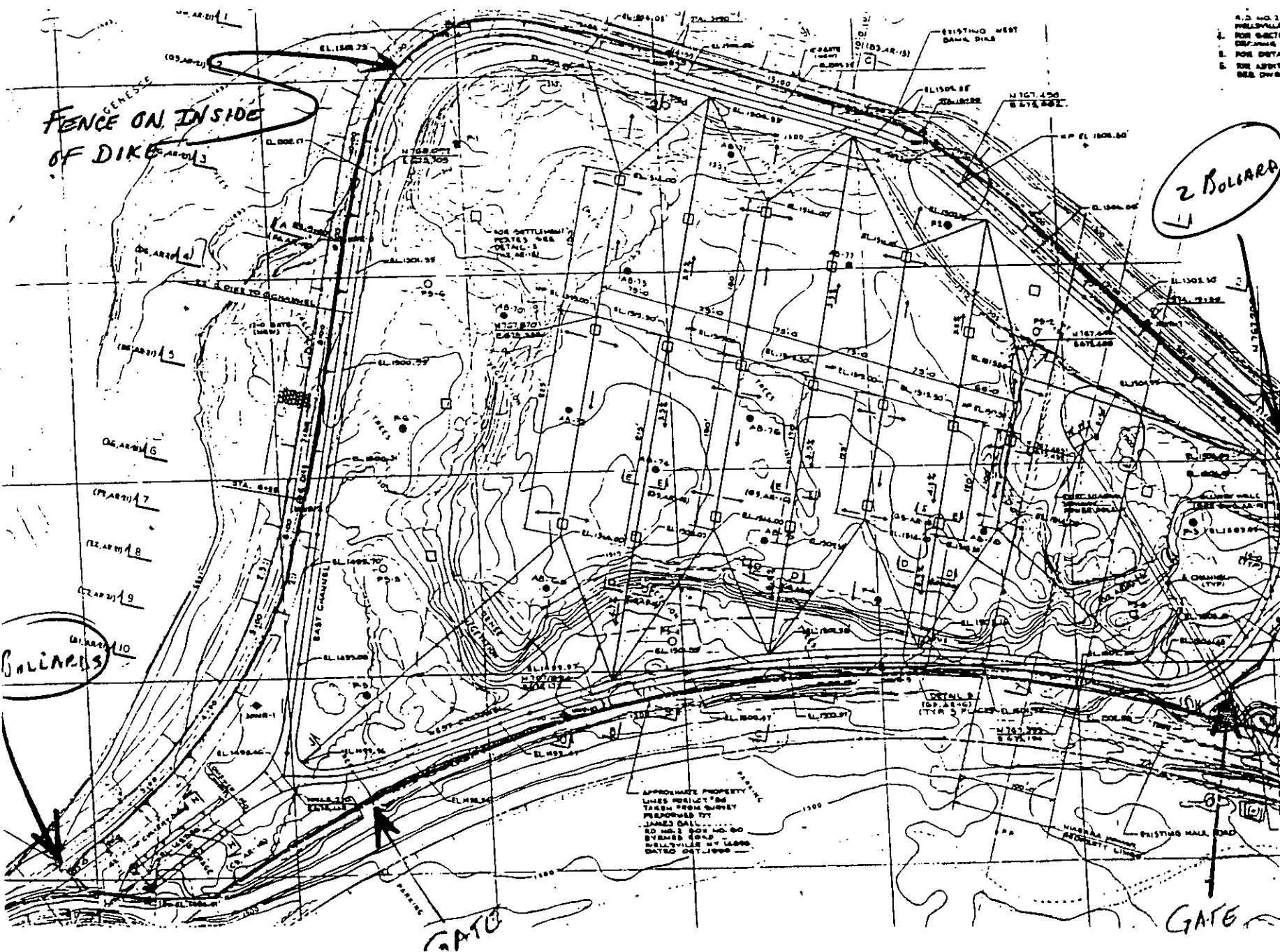
FENCE AND GATES

- **ALIGNMENT**
- **CERTIFICATES OF COMPLIANCE**
- **POSTS AND BRACES**
- **FABRIC**
- **MISCELLANEOUS FITTINGS**
- **BOLLARD DETAIL**

ALIGNMENT

**THE FOLLOWING
IS/ARE THE BEST
IMAGES FROM POOR
QUALITY ORIGINAL(S)**

**IMAGE
DATA**



CERTIFICATES OF COMPLIANCE



GEOSYNTEC CONSULTANTS

ARCO 

SUBMITTAL COVER SHEET

1993 year

PROJECT: CELA CAP

PROJECT NO.: GQ3201

TASK NO.: 0203

LOCATION: WELLSVILLE, NEW YORK

CONTRACTOR: GEO-CON, INC. (C91028-003-01)

SUBMITTAL NO.: 285F03

REVISION NO.: ADD No: 1.

SUBMITTAL TITLE: Fences & Gates: Certificates of Compliance

DATE RECEIVED:

8 JAN 93
(day/ month/ yr)

DATE REVIEWED:

21 JAN 93
(day/ month/ yr)

RESUBMITTAL REQUIRED:

☐ YES

☒ NO

DATE APPROVED:

21 JAN 93
(day/ month/ yr)

COMMENTS:

DISTRIBUTION:

BY:

GEOSYNTEC CONSULTANTS

BY:

ARCO

RECEIVED

JAN 04 1993

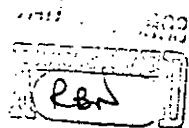
**ARCO Field Office
Wellsville, NY**

SUBMITTAL 28SF03
ADDENDUM NO. 1
CONTRACT NO. C91028-003-01
FENCES & GATES: CERTIFICATES OF COMPLIANCE
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor



Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

Certificates of Compliance

Attached are the manufacturer's certificates of compliance for the following fence and gate materials: posts and braces, chain link fence, and the miscellaneous fittings. This completes all materials for the fence and the gates.



TUBE & CONDUIT

16100 South Lathrop Avenue
Harvey, Illinois 60426
(708) 339-1610

December 9, 1992

Semmerling Mfg. Co., Inc.
4000 River Road
Roulin Industrial Park
Tonawanda, NY 14150

CERTIFICATION OF COMPLIANCE

INVOICES: F50884, F51809

PROJECT: ARCO FACILITY
(FORMERLY SINCLAIR OIL REFINERY)
WELLSVILLE (ALLEGANY COUNTY), NY

CONTRACTOR: SUNNYDALE FENCE, WELLSVILLE, NY

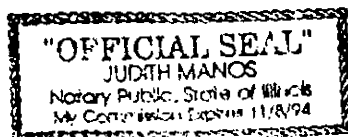
This is to certify the SS40 (R) pipe material as covered by the subject invoices and manufactured by Allied Tube & Conduit Corporation, conforms to the material requirements of Federal Specification RR-F-191/3C and ASTM Specifications F669 and F1234.

We further certify that all manufacturing processes for the steel in Allied SS40 (R) pipe material occurred in the United States and comply with the "Buy American" clause as dictated in applicable Federal and State construction projects.

Cordially,

Donald C. Harris
Manager-Technical Services
Fence Division

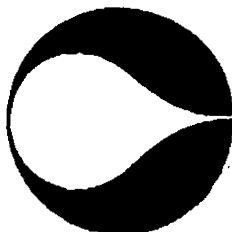
DCH:jm



Sworn and subscribed to before me
this 9th day of December, 1992.

Notary Public

A Grinnell COMPANY



**CARGILL
STEEL AND WIRE**

Wire Department
4323 Outland Road
Memphis, TN 38118
Mail Address: Box 18733
Memphis, TN 38181-0733
Local (901) 794-9910
Watts (800) 221-9453
Fax (901) 363-1398

December 28, 1992

Semmerling MFG
4000 River RD
Roblin Industrial Park
Tonawanda, NY 14151

Re: 2 x 9 x 96 KT

Dear Customer:

This letter is to certify the hot dipped galvanized chain link fabric furnished to you is manufactured in accordance with Federal Specification RR-F-191 and ASTM A-392. All manufacturing processes for this steel have occurred in the United States. The steel was smelted at North Star Steel in Beaumont, Texas.

Sincerely,

Mark Rich
Outside Sales Representative

tl

Post-It™ brand fax transmittal memo 7671		# of pages: 1
To: Mike	From: Mark Rich	
Co: Semmerling	Co: Cargill	
Dept: Sales	Phone: 800 221-9453	
Fax: 716 874-0401	Fax: 901 363-1398	



Hearne Steel Company, Inc.

HEARNE, TEXAS

Leading Manufacturers Of Chain Link Fence Fittings

J.C. AMOS, President
R.W. AMOS, Vice-President
C.R. AMOS, Secy-Treasurer

OFFICE ADDRESS:
P.O. DRAWER 968
HEARNE, TEXAS 77859
PHONE: 409/279-3464
FAX: 409/279-6529

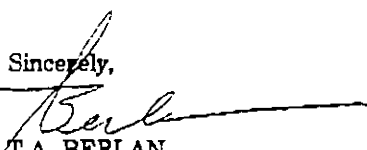
SEMMERLING C/O ROBLIN INDUSTRIAL PARK
4000 RIVER ROAD
TONAWANDA, NY 14060

RE: PO# 11102

To Whom It May Concern,

This letter is to certify that the Fence Fittings manufactured by Hearne Steel Company, Incorporated, and supplied to the above named company, are domestically produced and will comply with Federal Specifications. (ASTM A 158). American made with a minimum zinc coating of .2 ounces.

Sincerely,


T.A. BERLAN
SALES REP.
Hearne Steel Company

ATTN:
MIKE
Gould
1-Page

POSTS AND BRACES

THE PERFORMER
ALLIED SS 40[®]

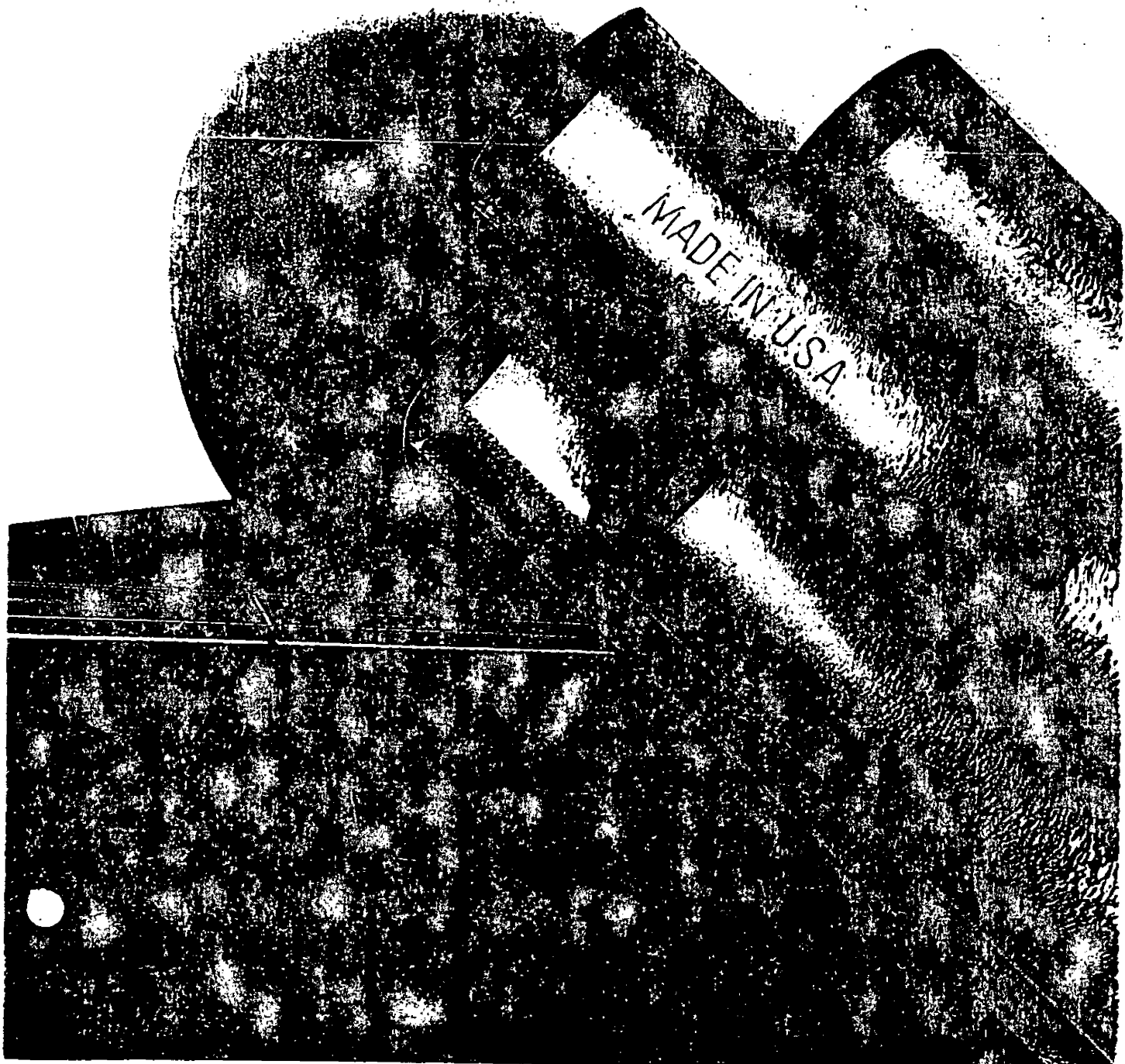
THE MOST SPECIFIED FENCE FRAMEWORK
IN THE U.S.A.

102830/ALL
Buyline 3404



 **allied**
TUBE & CONDUIT
FENCE DIVISION

 Grinnell





SS 40 OUT-PERFORMS SCHEDULE 40

shall be determined according to the methods outlined in ASTM E-8. For materials manufactured under this specification the 0.2 offset method shall be used to determine the yield strength.

7. Corrosion Performance of the Coated Surfaces

7.1 Salt Spray Resistance.

7.2 **Exterior Surface.** The exterior clear coated surface of the pipe shall have a demonstrated ability to resist 1000 hours of exposure to salt fog with a maximum of 5% red rust when conducted in accordance with ASTM B-117.

7.3 **Interior Surface.** The interior zinc rich coated surface shall have a demonstrated ability to withstand 650 hours of exposure to salt fog, with a maximum of 5% red rust when conducted in accordance with ASTM B-117.

7.4 Humidity Resistance.

7.5 **Exterior Surface.** The clear coated exterior surface of the pipe shall have a demonstrated ability to resist 500 hours of exposure to 100% relative humidity without blistering and peeling when conducted in accordance with ASTM D-2247.

7.6 Weatherometer Resistance.

7.7 **Exterior Surface.** The clear exterior coating shall have a demonstrated ability to withstand exposure for 500 hours without failure at a black panel temperature of 145°F. (63°C.) when tested in accordance with ASTM D-1499 (ASTM G-26) Xenon Type BH apparatus or ASTM G-23 (Carbon Arc) Type HH apparatus.

OP OVERALL PRODUCT IN PLACE

Characteristics/Performance

SS-40 out-performs Schedule 40 in both strength and corrosion resistance. SS-40 produced under the patented Flo-Coat® process has made obsolete the concept that weight means strength. SS-40 is as much as 33% stronger than Schedule 40, yet is 20% lighter in gauge and weight.

The key to its superior strength is due to two factors. First, the steel is cold rolled into the tubular shape, resulting in a yield strength in excess of 50,000 psi. Second, the cold water quenching following the hot-dip galvanizing has a tempering effect.

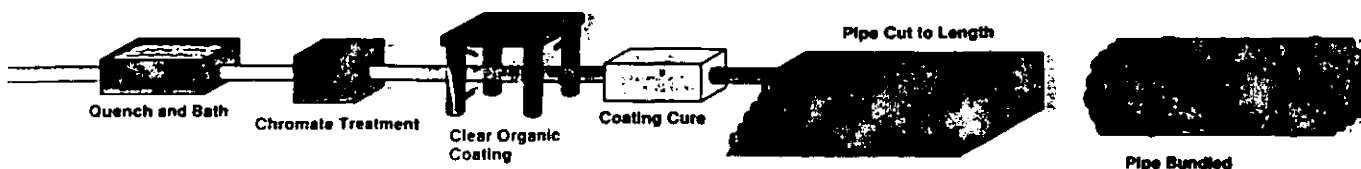
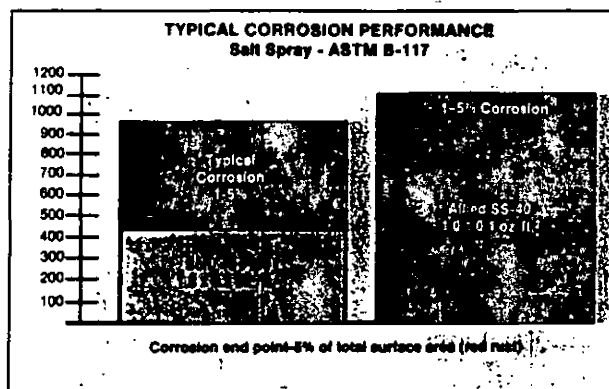
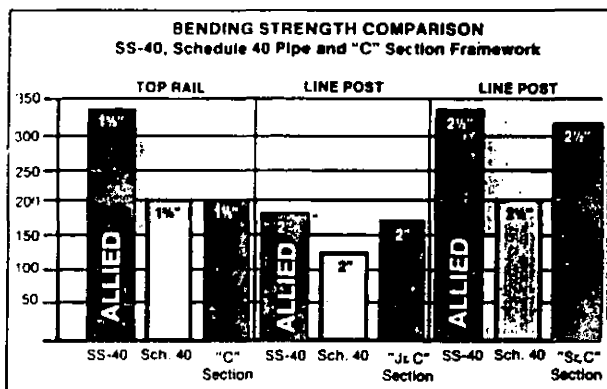
The greater corrosion resistance is achieved through the patented Flo-Coat® process in which the pipe is hot-dip galvanized and chromated by total immersion.

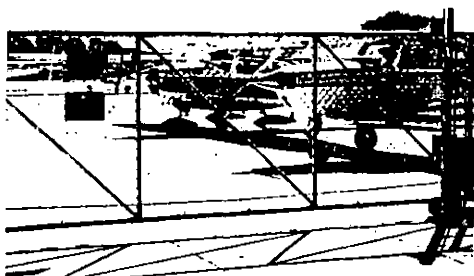
This is followed by a clear organic coating. This coating minimizes oxidation, preserving the bright, shiny appearance.

The combined coatings of zinc, zinc chromate and clear organic produce a "synergistic" effect that has greater corrosion resistance than the sum of the individual coatings.

It all adds up to superior protection.

These three carefully metered 360° coatings applied during the Flo-Coat® process give SS-40 a highly lustrous and uniform coat which fabricates without flaking. SS-40 remains maintenance-free, attractive and durable, year after year.





TRIPLE-COATED FOR LONGEVITY, COLD-FORMED FOR STRENGTH...

Allied has developed an engineering breakthrough in corrosion resistance for lasting durability in all climates and atmospheric conditions. The formula is a uniform triple layer of zinc, chromate, and clear organic coating which are applied in one continuous operation by Allied's in-line patented Flo-Coat® process.

- Cold-rolled Steel Providing High Yield/Tensile Strength
- Hot-dipped Uniform Zinc Galvanizing After Pipe is Fabricated
- Chromate Conversion Coating
- Clear Organic Coating

(TS) TECHNICAL SUPPORT

1. Scope

This specification covers galvanized/clear coated steel fence pipe products manufactured by the Allied Tube & Conduit patented Flo-Coat® process.

2. Materials

2.1 Base Metal. Base metal shall be steel of such quality that the fabricated product will meet the performance criteria set forth in this standard. The steel strip used in the manufacture of the pipe shall conform to ASTM A-569:

2.2 Zinc. The zinc used in the manufacture of Allied's Flo-Coat pipe conforms with ASTM B-6 High Grade and Special High Grade Zinc.

2.3 Clear Coating. The clear coating is manufactured from high grade raw materials which produce an organic coating.

2.4 Internal Coating. The internal zinc rich based coating shall have a minimum zinc powder loading of 91% by weight and be capable of providing galvanic protection.

2.5 Chromate. A specially developed chromate conversion coating is deposited on the surface of the zinc to improve the corrosion resistance.

3. Weight of Zinc Coatings

3.1 The weight of zinc shall be 1.0 oz./ft.² ± 0.1 oz./ft.².

3.2 The weight of zinc coatings shall be determined by the method contained in ASTM A-90.

4. Chromate Conversion Coating

4.1 The chromate coating weight shall be 30 micrograms/sq. in., ± 15 micrograms/sq. in.

4.2 The coating weight shall be determined by a strip and weigh method utilizing an atomic absorption spectrophotometer.

5. Thickness of Clear Coatings

5.1 The thickness of the clear coating shall be a nominal .5mils ± .2 mils.

5.2 The thickness of this coating shall be determined by measurement with a suitable magnetic or eddy current coating thickness tester. The thickness of the clear coating is the difference between the thickness of zinc and the total thickness of the clear coating and zinc.

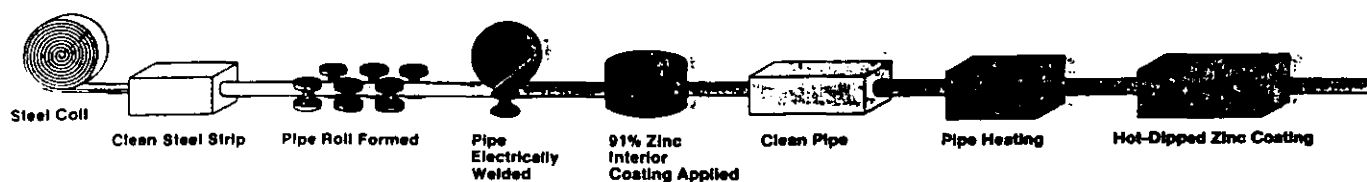
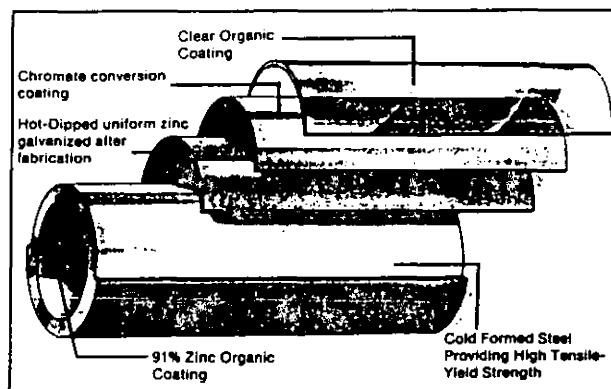
5.3 The coating thickness tester shall be standardized on the steel surface after removing the zinc prior to making the measurements.

6. Performance Properties of the Product

6.1 Strength. Pipe products manufactured in accordance with this standard shall meet the minimum strength requirements described in Table 1 (See Back Page).

6.2 Bending Tests. The strength of line, end, corner and pull posts shall be determined by using a 4- or 6-foot cantilever beam test. The strength of top rail shall be determined by using a 10-foot free-supported beam test. At the buyer's option, 4- or 6-foot cantilever tests can be used to test all framework components.

6.3 Alternative—Calculation of Bending Moment. As an alternative to the beam tests described above, conformance with the specification can be demonstrated by measurement of the yield/tensile strength of a randomly selected piece from each lot, and calculation of the section modulus according to the established formula for this purpose. The yield/tensile strength



NOMINAL SIZE ID

• TOP & BRACE
• LINE POSTS
• END & CORNER

1 1/4"
2"
2 1/2"

• GATE POSTS

2 1/2"

SS-40 PIPE SIZES

TABLE 1
PHYSICAL DIMENSIONS AND STRENGTH CALCULATIONS

Industry O.D.	Nominal Pipe Size I.D.	Decimal Equiv.	Pipe Wall Thickness	Wt./Ft.	Section Modulus (1)	Yield Strength	Max. Bending Moment lb.in.	Calculated Load (lbs)		
								10' Free Supported	4' Cantilever	6'
1 1/4"	1"	1.315	.104	1.35	.1111	50000	5555	185	116	70
1 1/2"	1 1/4"	1.660	.111	1.84	.1961	50000	9805	327	204	135
2"	1 1/2"	1.900	.120	2.28	.2810	50000	14050	468	293	195
2 1/2"	2"	2.375	.130	3.12	.4881	50000	24405	814	508	330
3"	2 1/2"	2.875	.160	4.64	.8778	50000	43890	1463	914	610
3 1/2"	3"	3.500	.160	5.71	1.3408	50000	67040	2234	1396	931
4"	3 1/2"	4.000	.160	6.56	1.7819	50000	89095	2969	1856	1237

(1) Nominal O.D. and minimum wall thickness

MR

MANUFACTURER

Founded in 1960 by the inventor of the patented Flo-Coat® process, Allied Tube & Conduit Corporation has emerged as a potent factor in the pipe and tube industry. In over two decades since its inception, production has surpassed 500,000 tons annually. Fence pipe, a mainstay of its worldwide sales, has propelled Allied to its position as Number One Supplier to the fencing industry. SS-40®, available through nationwide distribution, is manufactured in Harvey, IL and Philadelphia, PA. We're proud to display the "MADE IN USA" marking on every piece of pipe produced.

UA

USES, APPLICATIONS

SS-40 fence pipe, developed by the research and engineering department of Allied, has grown to be the most specified framework in the industry. Its specifications and characteristics are based on the concept that performance is the only true criteria. SS-40 will give superior performance wherever Schedule 40 was previously used. Acceptance of SS-40 has grown rapidly and increased significantly. We have gained acceptance by State

Highway Departments throughout the U.S., including the seaboard states, which have the most corrosive environments.

CC

CODE CERTIFICATIONS

Some agencies which have approved SS-40 are:

- (AASHTO) American Association of State Highway and Transportation Officials M181-81
- Federal Specification RR-F-191.2c (Chain Link Fence Gates)
- Federal Specification RR-F-191.3c (Chain Link Fence Posts, Braces, Top Rails)
- Corps of Engineers CEGS-02444
- Department of the Navy TS-02711
- Department of Transportation Federal Aeronautics Administration Engineering Brief No. 15 Item F162
- U.S. Department of Justice - Federal Bureau of Prisons
- ASTM Specification F-669-81 Standard Specifications for Strength

Specifications, descriptions, and illustrated material herein are accurate as known at time of publication and are subject to change without notice.



MEMBER



TUBE & CONDUIT
FENCE DIVISION

16100 South Lathrop Avenue
Harvey, Illinois 60426
(708) 339-1610

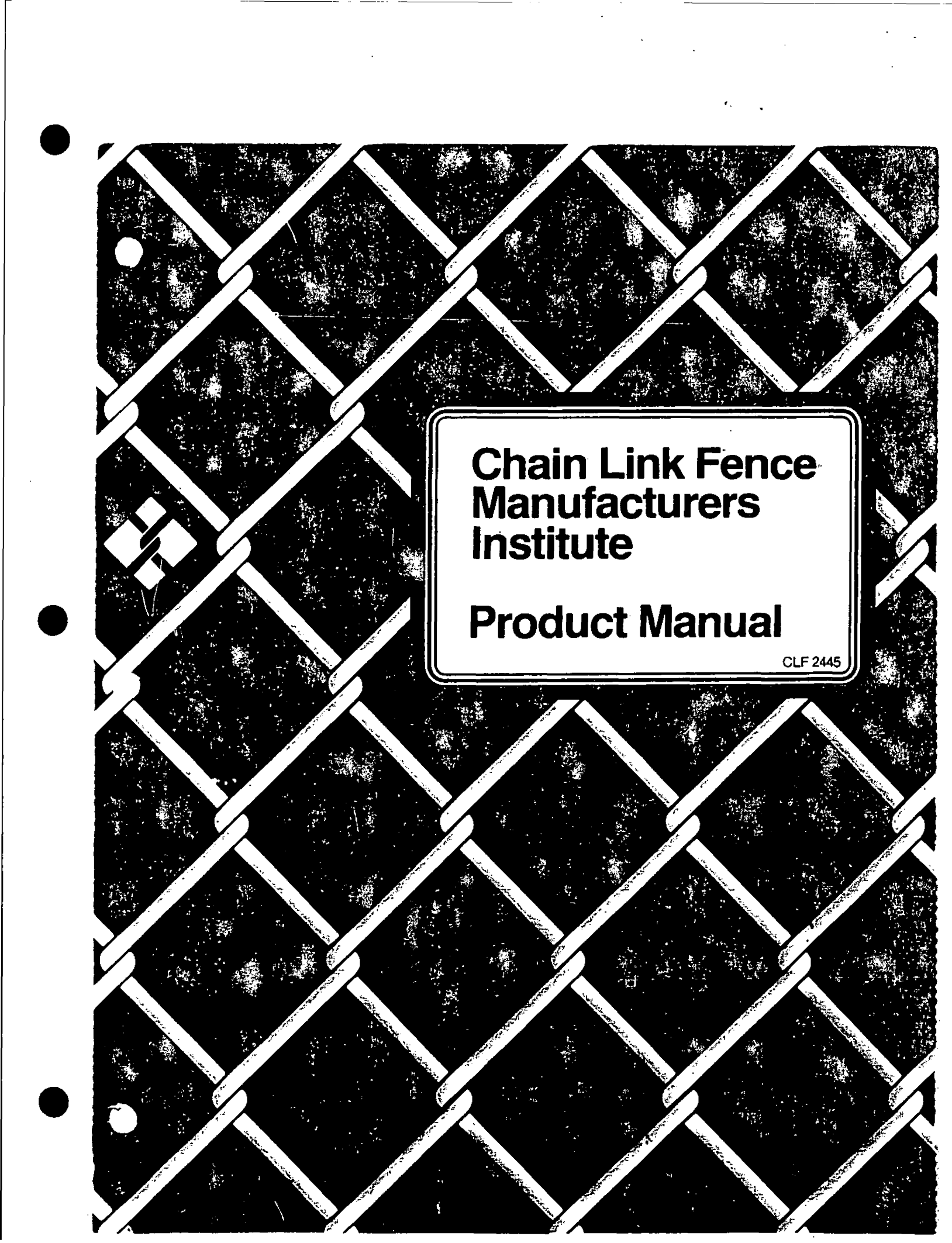


A Grinnell COMPANY

Call our Toll-free number for engineering or design assistance.
1-800-882-5543

Distributed by:

FABRIC

The background of the entire page is a black and white pattern of a chain link fence. The pattern consists of interlocking diamond shapes formed by diagonal lines, creating a repeating geometric texture.

Chain Link Fence Manufacturers Institute

Product Manual

CLF 2445

CLFMI PRODUCT MANUAL

Standard Guide for Metallic-Coated Steel Chain Link Fence & Fabric

1. Purpose

1.1 The purpose of this guide is to provide a nationally recognized standard of quality for metallic-coated steel chain link fence fabric and when combined with framework and accessory items, as listed in this publication, to provide a nationally recognized standard of quality for complete fence.

2. Scope

2.1 This guide gives the nomenclature, definition, and general requirements for metallic-coated steel chain link fence fabric and framework for industrial usage, as covered by ASTM. See page 3 for applicable documents.

3. Description of Terms

3.1 *Chain Link Fence Fabric* - A fencing material from steel wire helically wound and interwoven in such a manner as to provide a continuous mesh without knots or ties except in the form of knuckling or of twisting the ends of the wires to form the selvage of the fabric.

3.2 *Knuckling* - This term is used to describe the type of selvage obtained by interlocking adjacent pairs of wire ends and then bending the wire ends back into a closed loop.

3.3 *Twisting* - This term is used to describe the type of selvage obtained by twisting adjacent pairs of wire ends together in a closed helix of 1 1/2 machine turns, which is equivalent to three full twists, and cutting the wire ends at a sharp angle to provide sharp points. The wire ends beyond the twist shall be at least 1/4 inch long.

3.4 *Diamond Count* - A term used to designate the number of mesh openings in each height of fabric.

4. Requirements

4.1 Materials

4.1.1 *Base Metal* - The base metal of the fabric shall be a good commercial quality of steel wire of the gages specified in Table 1.

4.1.2 *Zinc Coating* - The zinc coating on the fabric may be ordered in two coating weight classes, as Class 1 - the weight of zinc coating shall not be less than 1.2 oz./ft.² of uncoated wire surface; or Class 2 - the weight of zinc coating shall not be less than 2 oz./ft.² of uncoated wire surface as determined from the average of results of two or more specimens, and not less than 1.8 oz./ft.² of uncoated wire surface for any individual specimen. Fabric galvanized after fabrication is normally not produced with a Class 2 coating on 11 ga. (.120") or 11 1/2 ga. (.113") wire. The weight of the zinc coatings shall be determined in accordance with 5.5.2. The zinc used for the coating shall conform to the grades specified in ASTM Designation B6, Standard Specification for Slab Zinc.

4.1.3 *Aluminum Coating* - The wire shall be aluminum coated by the hot-dip process before weaving into the fabric. The weight of aluminum coating for 6 ga. (.192") and 9 ga. (.148") shall not be less than 0.40 oz. per sq. ft. and for 11 ga. (.120") shall not be less than 0.35 oz. per sq. ft. of uncoated wire surface when tested in accordance with 5.5.3.

4.1.4 *Aluminum Alloy* - ASTM F1183 - Chain link fabric woven from aluminum alloy, 9 gauge (.148") or 6 gauge (.192"), wire.

4.2 *Fabric Sizes* - The height, diamond count, size of mesh, and wire diameters of chain link fabric shall be as given in Table 1. The methods of measurement and tolerances are given in 4.2.1., 4.2.2. and 4.2.3.

4.2.1 *Height of Fabric* - The height of the fabric shall be the overall dimension from ends of twists or knuckles. The tolerance of the nominal height shall be plus or minus one inch.

4.2.2 *Mesh Sizes* - The size of mesh shall conform to the requirements as shown in Table 1.

The permissible variation from the specified size of mesh shall be

$\pm 1/8$ in. for all mesh sizes over 1 in. and $\pm 1/16$ in. for all mesh sizes 1 in. and under.

4.2.3 *Wire Diameter* - The diameter of the coated wire shall be determined as the average of two readings measured to the nearest 0.001 inch taken at right angles to each other on the straight portion of the parallel sides of the mesh. The tolerance in the diameter of the coated wire shall be plus or minus 0.005 inch.

4.3 *Selvage* - Fabric with 2 inch or 2 1/2 inch mesh, in heights less than 72 inches shall be knuckled at both selvages. Fabric 72 inches high and over shall be knuckled at one selvage and twisted at the other. These are the standard selvages. Other selvage combinations will be supplied only if specified by the purchaser.

Caution: Twisted selvages for fences under 72 inches in height are not recommended because of consumer safety considerations.

The selvages of fabrics with meshes of less than 2 inches shall be knuckled on both edges.

4.4 *Workmanship* - Chain link fence fabric shall be produced by methods recognized as good commercial practice. The metallic coating shall be applied in a continuous process and shall not be applied to the fabric in roll form. Excessive roughness, blisters, frozen joints, bruises and flaking shall be noted. These and other obvious defects, if present to any considerable extent, may provide a basis for fabric rejection.

5. Inspection and Testing

5.1 *General* - The tests given herein are intended primarily for use as production tests in conjunction with manufacturing processes, inspection methods and with other tests if needed, according to 5.2, so as to insure the conformity of the chain link fabric with the requirements of this guide.

5.2 *Production Inspection and Testing* - During the process of manufacture, the manufacturer shall make such inspections and tests as are needed to maintain the quality of the product so as to be consistently in conformity with this guide. The inspection and tests given herein (see 5.3 and 5.5) shall be made regularly during production for all chain link fabric furnished as being in conformity with this guide.

5.3 *Inspection* - The chain link fabric shall be visually inspected to determine its conformance with the workmanship, design and dimensional requirements of this standard.

5.4 *Sampling* - One roll from every 50 rolls or fraction thereof shall be selected at random for test purposes, but in no case shall less than 2 samples be selected from a shipment. The specimens for test purposes shall consist of individual pieces of wire taken from the outside end of the sample rolls.

5.5 Test Procedures

5.5.1 *Breaking Strength* - Table 2 & 3 - The break strength of the fabric shall be determined in accordance with the method described in ASTM A370, using one specimen from each sample roll. Specimens to establish conformance to this requirement shall constitute individual pickets from a section of the fence fabric of a sufficient length so as to measure 15-18 inches after straightening. The straightened portion of the specimen shall be inside the jaws of the tensile testing machine so that the actual test is performed on the underformed section between the jaws. If fracture takes place, other than between the grips, the test shall be discarded.

5.5.2 *Weight of Zinc Coating* - The weight of zinc coating on the fabric shall be determined in accordance with the method described in ASTM Designation A90, using one piece of wire removed from the fabric of each sample roll.

5.5.3 *Weight of Aluminum Coating* - The weight of aluminum coating on the fabric shall be determined in accordance with the method described in ASTM Designation A428, using one piece of wire removed from the fabric of each sample roll.

5.5.4 The specimen tested may be of any continuous length over 12 inches but preferably should be about 24 inches long.

5.6 **Noncompliance** - If any specimen tested fails to meet the requirements of this guide, the roll represented by the specimen shall be rejected and two additional rolls shall be tested, both of which shall meet the requirements in every respect; otherwise the lot represented by the samples may be rejected.

Applicable Documents: The following documents form a part of this guide to the extent listed herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply. Chain link fabric specifications vary slightly in Canada. Consult the current Canadian specification CAN 2.138.1.1 (x).

American Society for Testing & Materials (ASTM) Standards:

A 90—Tests for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles	A 824—Metallic-Coated Steel Marcellus Tension Wire
A 121—Zinc-Coated (Galvanized) Steel Barbed Wire	B 6—Specification for Zinc (Slab Zinc)
A 123—Zinc (Hot Galvanized) Coatings on Products, Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strip	F 552—Standard Definitions of Terms Relating to Chain Link Fencing
A 370—Mechanical Testing of Steel Products	F 567—Installation of Chain Link Fence
A 392—Zinc-Coated Steel Chain Link Fence Fabric	F 573—Residential Zinc-Coated Steel Chain Link Fence Fabric
A 428—Tests for Weight of Coating on Aluminum-Coated Iron or Steel Articles	F 626—Fence Fittings
A 491—Aluminum-Coated Steel Chain Link Fence Fabric	F 669—Strength Requirements of Metal Posts and Rails for Industrial Chain Link Fence
A 570—Hot Rolled Sheet and Strip, Structural Quality	F 900—Industrial and Commercial Swing Gates
A 572—High Strength Low-Alloy Columbium-Vanadium Steel of Structural Quality	F 1083—Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
A 585—Aluminum-Coated Steel Barbed Wire	F 1183—Aluminum Alloy Chain Link Fence Fabric
	F 1184—Industrial and Commercial Horizontal Slide Gates
	F 1234—Protective Coatings on Steel Framework for Industrial Fences

Table 1 - Fabric Size

Recommended Usage	Height of Fabric	Size of Mesh	Gage, ** Coated Wire	Nominal Diameter Coated Wire
Heavy Industrial	36" 42" 48" 60" 72" 84" 96" 120" 144" Diamond Count 10 1/2 12 1/2 13 1/2 17 1/2 20 1/2 24 1/2 27 1/2 34 1/2 41 1/2	2"	6	0.192"
Standard Industrial Heavy Industrial	36" 42" 48" 60" 72" 84" 96" 120" 144" Diamond Count 10 1/2 12 1/2 13 1/2 17 1/2 20 1/2 24 1/2 27 1/2 34 1/2 41 1/2	2"	9	0.148"
Light Industrial Standard Residential	36" 42" 48" 60" 72" 84" Diamond Count 10 1/2 12 1/2 13 1/2 17 1/2 20 1/2 24 1/2	2"	11	0.120"
Light Residential	36" 42" 48" 60" Diamond Count 9 1/2 11 1/2 13 1/2 16 1/2	2 1/4"	11 1/2	0.113"
Tennis Court	120" 144" Diamond Count 39 1/2 47 1/2	1 3/4"	11	0.120"
Security*	36" 42" 48" 60" 72" 84" 96" 120" 144" See Fig. 1 for Mesh Dimensions	3/8", 1/2", 5/8"	11	0.120"

* Small mesh 3/8", 1/2", 5/8" only available in aluminum coated
** Aluminum alloy fabric available only in 9 gage (.148) and 6 gage (.192)

Table 2 - Breaking Strength of Coated Steel Wire

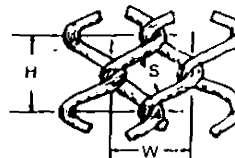
Diameter of Coated Wire Inches	Minimum Breaking Strength lb.
0.192	2170
0.148	1290
0.120	850
0.113	750

Table 3 - Breaking Strength of Aluminum Alloy Wire

Diameter of Wire Inches	Minimum Breaking Strength lb.
0.192	1560
0.148	925

*FIG. 1 - Mesh Dimensions for 5/8-in., 1/2-in., and 3/8-in. Fabric

S.	H	W
5/8 in. MESH	3/4 in.	3/4 in.
1/2 in. MESH	1 1/8 in.	1 1/8 in.
3/8 in. MESH	1 1/2 in.	1 1/2 in.



Industrial Steel Guide for Fence Rails, Posts, Gates and Accessories

1. **MATERIALS** - Posts, gate frames, braces, rails, stretcher bars, truss rods and tension wire shall be of steel. Gate hinges, post caps, barbed wire supporting arms, stretcher bar bands, and other parts shall be of steel, malleable iron, ductile iron or equal except that post tops, rail ends, ties and clips may be of aluminum.

Optional supplemental color coating, 10 mils of polyvinyl chloride

ings as specified. Unless otherwise specified, color of the coating shall be in accordance with ASTM F 934, Green, Olive Green, Brown, Black. Moveable and threaded fittings need not be coated but field coated per manufacturers' recommendations.

1.1 **Intermediate post** shall be Type I or Type II round pipe or "C" roll formed section conforming to the dimensions and weight shown on

MISCELLANEOUS FITTINGS

**Fence
fittings
by
Hearne Steel
Company, inc.**



Pressed Steel Fittings

P.O. Drawer 968 Hearne, Texas 77859 (409) 279-3464 - 279-5356

FAX# 409-279-6529

Part Number	Description	Wt. Each	Std. Pkg.

1-11-RGB 138	1 3/8 Gate Band 14 Ga x 3/4"	.13	250
1-11-RTB 138	1 3/8 Tension Band 14 Ga x 3/4"	.15	250
1-11-RTB 158	1 5/8 Tension Band 14 Ga x 3/4"	.15	250
1-11-RTB 178	1 7/8 Tension Band 14 Ga x 3/4"	.16	250
1-11-RTB 238	2 3/8 Tension Band 14 Ga x 3/4"	.19	250
1-11-RTB 278	2 7/8 Tension Band 14 Ga x 3/4"	.21	200
1-11-RTB 312	3 1/2 Tension Band 14 Ga x 3/4"	.25	200
1-11-RTB 400	4" Tension Band 14 Ga x 3/4"	.28	200
1-11-RTB 412	4 1/2 Tension Band 14 Ga x 3/4"	.31	200

SINGLE TENSION BAND
(14 Gauge x 3/4")



1-12-WTB 138	1 3/8 Tension Band 14 Ga x 7/8"	.15	250
1-12-WTB 158	1 5/8 Tension Band 14 Ga x 7/8"	.18	250
1-12-WTB 178	1 7/8 Tension Band 14 Ga x 7/8"	.19	250
1-12-WTB 238	2 3/8 Tension Band 14 Ga x 7/8"	.22	250
1-12-WTB 278	2 7/8 Tension Band 14 Ga x 7/8"	.25	100
1-12-WTB 312	3 1/2 Tension Band 14 Ga x 7/8"	.29	100
1-12-WTB 400	4" Tension Band 14 Ga x 7/8"	.33	100
1-12-WTB 412	4 1/2 Tension Band 14 Ga x 7/8"	.36	100

SINGLE TENSION BAND
(14 Gauge x 7/8")



1-13-MTB 158	1 5/8 Tension Band 12 Ga x 7/8"	.25	250
1-13-MTB 178	1 7/8 Tension Band 12 Ga x 7/8"	.27	250
1-13-MTB 238	2 3/8 Tension Band 12 Ga x 7/8"	.31	250
1-13-MTB 278	2 7/8 Tension Band 12 Ga x 7/8"	.34	100
1-13-MTB 312	3 1/2 Tension Band 12 Ga x 7/8"	.38	100
1-13-MTB 400	4" Tension Band 12 Ga x 7/8"	.45	100
1-13-MTB 412	4 1/2 Tension Band 12 Ga x 7/8"	.50	100
1-13-MTB 658	6 5/8 Tension Band 12 Ga x 7/8"	.72	50
1-13-MTB 858	8 5/8 Tension Band 12 Ga x 7/8"	.87	50

SINGLE TENSION BAND
(12 Gauge x 7/8")



1-14-HTB 138	1 3/8 Tension Band 11 Ga x 1"	.29	250
1-14-HTB 158	1 5/8 Tension Band 11 Ga x 1"	.32	250
1-14-HTB 178	1 7/8 Tension Band 11 Ga x 1"	.35	250
1-14-HTB 238	2 3/8 Tension Band 11 Ga x 1"	.40	250
1-14-HTB 278	2 7/8 Tension Band 11 Ga x 1"	.45	100
1-14-HTB 312	3 1/2 Tension Band 11 Ga x 1"	.53	100
1-14-HTB 400	4" Tension Band 11 Ga x 1"	.59	100
1-14-HTB 412	4 1/2 Tension Band 11 Ga x 1"	.69	100
1-14-HTB 658	6 5/8 Tension Band 11 Ga x 1"	.94	50
1-14-HTB 858	8 5/8 Tension Band 11 Ga x 1"	1.14	50

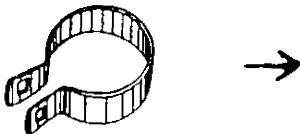
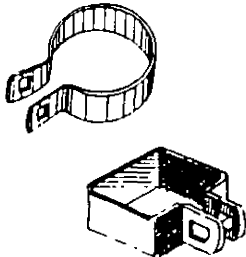
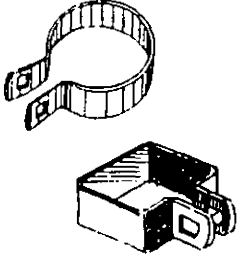
SINGLE TENSION BAND
(11 Gauge x 1")



Pressed Steel Fittings



P.O. Drawer 968 Hearne, Texas 77859 (409) 279-3464 - 279-5356
FAX# 409-279-6529

	Port Number	Description	Wt. Each	Std. Pkg.
SINGLE BRACE BAND (12 Gauge x 3/4")				
	1-22-RBB 138	1 3/8 Brace Band 12 Ga x 3/4"	.14	250
	1-22-RBB 158	1 5/8 Brace Band 12 Ga x 3/4"	.15	250
	1-22-RBB 178	1 7/8 Brace Band 12 Ga x 3/4"	.18	250
	1-22-RBB 238	2 3/8 Brace Band 12 Ga x 3/4"	.22	250
	1-22-RBB 278	2 7/8 Brace Band 12 Ga x 3/4"	.25	200
	1-22-RBB 312	3 1/2 Brace Band 12 Ga x 3/4"	.30	200
	1-22-RBB 400	4" Brace Band 12 Ga x 3/4"	.33	200
	1-22-RBB 412	4 1/2 Brace Band 12 Ga x 3/4"	.36	200
SINGLE BRACE BAND (12 Gauge x 7/8")				
	1-23-MBB 158	1 5/8 Brace Band 12 Ga x 7/8"	.18	250
	1-23-MBB 178	1 7/8 Brace Band 12 Ga x 7/8"	.21	250
	1-23-MBB 238	2 3/8 Brace Band 12 Ga x 7/8"	.26	250
	1-23-MBB 278	2 7/8 Brace Band 12 Ga x 7/8"	.29	100
	1-23-MBB 312	3 1/2 Brace Band 12 Ga x 7/8"	.35	100
	1-23-MBB 400	4" Brace Band 12 Ga x 7/8"	.39	100
	1-23-MBB 412	4 1/2 Brace Band 12 Ga x 7/8"	.42	100
	1-23-MBB 658	6 5/8 Brace Band 12 Ga x 7/8"	.73	50
	1-23-MBB 858	8 5/8 Brace Band 12 Ga x 7/8"	.93	50
	1-23-MBB JRH	JR. H. Brace Band 12 Ga x 7/8"	.31	250
	1-23-MBB SRH	SR. H. Brace Band 12 Ga x 7/8"	.35	250
SINGLE BRACE BAND (11 Gauge x 1")				
	1-24-HBB 138	1 3/8 Brace Band 11 Ga x 1"	.24	250
	1-24-HBB 158	1 5/8 Brace Band 11 Ga x 1"	.28	250
	1-24-HBB 178	1 7/8 Brace Band 11 Ga x 1"	.29	250
	1-24-HBB 238	2 3/8 Brace Band 11 Ga x 1"	.36	250
	1-24-HBB 278	2 7/8 Brace Band 11 Ga x 1"	.41	100
	1-24-HBB 312	3 1/2 Brace Band 11 Ga x 1"	.55	100
	1-24-HBB 400	4" Brace Band 11 Ga x 1"	.60	100
	1-24-HBB 412	4 1/2 Brace Band 11 Ga x 1"	.76	100
	1-24-HBB 658	6 5/8 Brace Band 11 Ga x 1"	.95	50
	1-24-HBB 858	8 5/8 Brace Band 11 Ga x 1"	1.22	50
	1-24-HBB JRH	JR. H. Brace Band 11 Ga x 1"	.40	250
	1-24-HBB SRH	SR. H. Brace Band 11 Ga x 1"	.46	250
2-WAY BRACE BAND (12 Gauge x 3/4")				
	1-25-2WB 178	1 7/8-2 Way B.B. 12 Ga x 3/4"	.23	100
	1-25-2WB 238	2 3/8-2 Way B.B. 12 Ga x 3/4"	.26	100
	1-25-2WB 278	2 7/8-2 Way B.B. 12 Ga x 3/4"	.29	100
	1-25-2WB 312	3 1/2-2 Way B.B. 12 Ga x 3/4"	.29	100
	1-25-2WB 400	4"-2 Way B.B. 12 Ga x 3/4"	.40	100

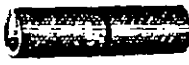


Pressed Steel Fittings

P.O. Drawer 968 Hearne, Texas 77859 (409) 279-3464 • 279-5356

1 AX# 409-279-0001

Part Number	Description	Wt. Each	Std. Pkg.

				2-WAY BRACE BAND (11 Gauge x 1")
1-26-2WB 178	1 7/8-2 Way B.B. 11 Ga x 1"	.35	100	
1-26-2WB 238	2 3/8-2 Way B.B. 11 Ga x 1"	.42	100	
1-26-2WB 278	2 7/8-2 Way B.B. 11 Ga x 1"	.44	100	
1-26-2WB 312	3 1/2-2 Way B.B. 11 Ga x 1"	.50	100	
1-26-2WB 400	4"-2 Way Brace Band 11 Ga x 1"	.60	100	
				PRESSED STEEL LINE TOP
1-30-SLT 158	1 5/8 x 1 3/8 PS Line Top	.50	50	
1-30-SLT 1585	1 5/8 x 1 5/8 PS Line Top	.52	50	
1-30-SLT 178	1 7/8 x 1 5/8 PS Line Top	.56	50	
1-30-SLT 238	2 3/8 x 1 5/8 PS Line Top	.75	50	
				PRESSED STEEL RAIL END
1-31-CRE 158	1 5/8 PS Combination Rail End	.36	100	
1-31-ORE 158	1 5/8 PS Offset Rail End	.38	100	
1-31-ORE 178	1 7/8 PS Offset Rail End	.50	100	
1-31-ORE 238	2 3/8 PS Offset Rail End	.56	100	
				TOP RAIL SLEEVES
1-32-TRS 1386	1 3/8 x 6" Top Rail Sleeve	.38	200	
1-32-TRS 1586	1 5/8 x 6" Top Rail Sleeve	.50	100	
1-32-TRS 1587	1 5/8 x 7" Top Rail Sleeve	.59	100	
1-32-TRS 1786	1 7/8 x 6" Top Rail Sleeve	.67	100	
				LINE RAIL CLAMP
1-33-LRC 1783	1 7/8 x 1 3/8 Line Rail Clamp	.72	100	
1-33-LRC 1785	1 7/8 x 1 5/8 Line Rail Clamp	.75	100	
1-33-LRC 2385	2 3/8 x 1 5/8 Line Rail Clamp	.75	100	
1-33-LRC 2785	2 7/8 x 1 5/8 Line Rail Clamp	.80	50	
				PRESSED STEEL PANEL CLAMP
1-34-PC 138	1 3/8 x 1 3/8 PS Panel Clamp	.50	100	
1-34-PC 158	1 5/8 x 1 5/8 PS Panel Clamp	.63	100	
1-34-PC 178	1 7/8 x 1 7/8 PS Panel Clamp	.75	100	
				PRESSED STEEL SADDLE CLAMP
1-34-SC 138	1 3/8 x 1 3/8 PS Saddle Clamp	.46	100	
1-34-SC 158	1 5/8 x 1 5/8 PS Saddle Clamp	.61	100	

Pressed Steel Fittings



P.O. Drawer 968 Hearne, Texas 77859 (409) 279-3464 - 279-5356

FAX# 409-279-6529

Part Number

Description

Wt. Std.
Each Pkg.

TRUSS ROD TIGHTNERS



1-55-TRT 001	Heavy Truss Rod Tightener	.53	100
1-55-TRT 002	Regular Truss Rod Tightener	.46	100
1-55-TRT 003	Residential Truss Rod Tightener	.46	100

PRESSED STEEL GATE SCROLLS



1-56-EGS 012	12" Gate Scroll (1 Piece)	.30	10
1-56-EGS 018	18" Gate Scroll (1 Piece)	.38	10
1-56-WGS 012	12" Welded Gate Scroll	.62	10
1-56-WGS 018	18" Welded Gate Scroll	1.12	10
1-56-WGS 024	24" Welded Gate Scroll	1.32	10
1-56-WGS 030	30" Welded Gate Scroll	1.47	10
1-56-WGS 036	36" Welded Gate Scroll	1.55	10
1-56-WGS 042	42" Welded Gate Scroll	1.80	10
1-56-WGS 048	48" Welded Gate Scroll	2.05	10

PRESSED STEEL COLLAR



1-60-PSC 138	1 3/8 Pressed Steel Collar	.43	100
1-60-PSC 158	1 5/8 Pressed Steel Collar	.50	100
1-60-PSC 178	1 7/8 Pressed Steel Collar	.56	100

REGULAR PRESSED STEEL FORKS



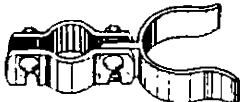
1-61-PSF 138	1 3/8 Regular PS Forks	.29	100
1-61-PSF 178	1 7/8 Regular PS Forks	.36	100
1-61-PSF 238	2 3/8 Regular PS Forks	.37	100

HEAVY PRESSED STEEL FORKS



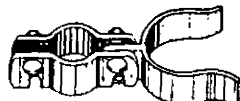
1-62-HPSF 158	1 5/8 Heavy PS Forks	.46	100
1-62-HPSF 178	1 7/8 Heavy PS Forks	.47	100
1-62-HPSF 238	2 3/8 Heavy PS Forks	.50	100
1-62-HPSF 278	2 7/8 Heavy PS Forks	.59	100
1-62-HPSF 312	3 1/2 Heavy PS Forks	.63	100
1-62-HPSF 400	4" Heavy PS Forks	.68	100

REGULAR PRESSED STEEL LATCH



1-63-PSL 138	1 3/8 x 1 3/8 Regular PS Latch	.82	50
1-63-PSL 178	1 3/8 x 1 7/8 Regular PS Latch	.89	50
1-63-PSL 238	1 3/8 x 2 3/8 Regular PS Latch	.90	50

HEAVY PRESSED STEEL LATCH



1-64-HPSL 178	1 3/8 x 1 7/8 Heavy PS Latch	1.00	50
1-64-HPSL 238	1 3/8 x 2 3/8 Heavy PS Latch	1.03	50
1-64-HPSL 278	1 3/8 x 2 7/8 Heavy PS Latch	1.12	50



Pressed Steel Fittings

P.O. Drawer 968 Hearne, Texas 77359 (409) 279-3464 - 279-5356

FA # 409 279 6529

Part Number	Description	Wt. Each	Std. Pkg.

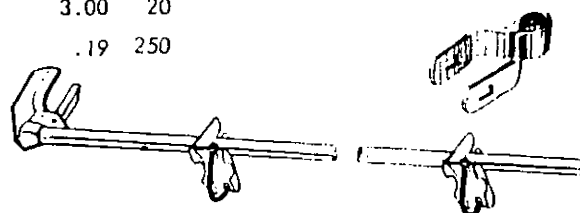
PRESSED STEEL BUTTERFLY LATCH

1-65-BFL 178	1 3/8 x 1 7/8 Butterfly Latch	1.19	25
1-65-BFL 238	1 3/8 x 2 3/8 Butterfly Latch	1.25	25



RESIDENTIAL DROP ROD ASSEMBLY & GUIDE

1-66-DRA 138	Residential Drop Rod Assembly	3.00	20
1-66-DRG 012	1/2" Res. Drop Rod Guide	.19	250



PRESSED STEEL INDUSTRIAL FORK & GUIDE

1-67-IF 158	1 5/8 PS Industrial Fork	1.56	25
1-67-IF 178	1 7/8 PS Industrial Fork	1.56	25
1-67-IG 158	1 5/8 PS Industrial Guide	1.06	75
1-67-IG 178	1 7/8 PS Industrial Guide	1.06	75



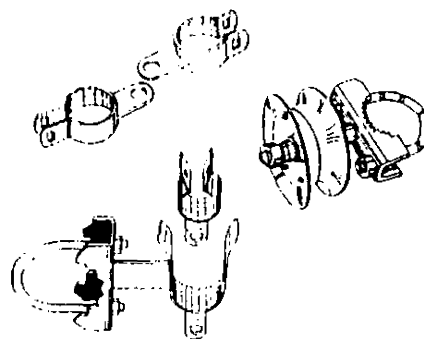
PRESSED STEEL GATE CENTER REST

1-68-GCR 178	2" Pressed Steel Gate Center Rest	1.50	25



RESIDENTIAL CANTILEVER & ROLLING GATE LATCH

1-70-DGL 2x2	2x2 Double Gate Latch	1.00	10
1-70-RCR 278	Residential Cantilever Roller	3.00	5
1-70-SGL 3x2	3 x 2 Single Gate Latch	3.00	10
1-70-SGL 4x2	4 x 2 Single Gate Latch	3.50	10



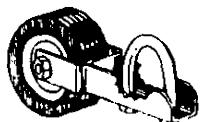
Pressed Steel Fittings



P.O. Drawer 968 Hearne, Texas 77859 (409) 279-3464 - 279-5356
FAX# 409-279-6529

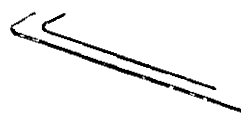
Part Number	Description	Wt. Each	Std. Pkg.

SWING GATE ROLLER



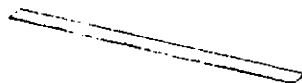
1-78-SGR 600	Swing Gate Roller with 6" Wheel	4.50	5
1-78-SGR 800	Swing Gate Roller with 8" Wheel	5.50	5

FABRIC TIES



1-80-AFT 001	Alum. Fabric Ties 11 Ga x 6 1/2	50.00	1 Box
1-80-AFT 002	Alum. Fabric Ties 9 Ga x 6 1/4	45.00	1 Box
1-80-AFT 003	Alum. Fabric Ties 9 Ga x 8 1/4	50.00	1 Box
1-80-SFT 001	Steel Fabric Ties 12 Ga x 6 1/2	25.00	1 Box
1-80-SFT 002	Steel Fabric Ties 12 Ga x 8 1/4	25.00	1 Box
1-80-SFT 003	Steel Fabric Ties 9 Ga x 6 1/2	25.00	1 Box
1-80-SFT 004	Steel Fabric Ties 9 Ga x 8 1/4	25.00	1 Box

TENSION BARS



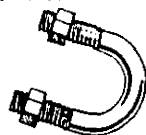
1-81-TBAR 041	3/16 x 5/8 x 41" Tension Bar	1.36	25
1-81-TBAR 047	3/16 x 5/8 x 47" Tension Bar	1.56	25
1-81-TBAR 059	3/16 x 5/8 x 59" Tension Bar	1.96	25
1-81-TBAR 071	3/16 x 5/8 x 71" Tension Bar	2.36	25
1-81-TBAR 171	3/16 x 3/4 x 71" Tension Bar	2.90	25

BOLTS



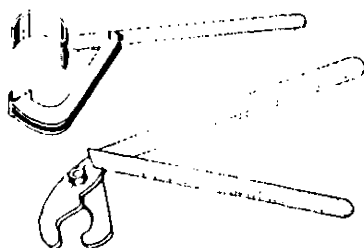
1-82-GCB 382	3/8 x 2 Carriage Bolt	.09	1000
1-82-GCB 3821	3/8 x 2 1/2 Carriage Bolt	.11	1000
1-82-GCB 383	3/8 x 3 Carriage Bolt	.13	1000
1-82-GCB 516	5/16 x 1 1/4 Carriage Bolt	.05	2000
1-82-GCB 5162	5/16 x 2" Carriage Bolt	.07	2000
1-82-GJB 412	5/8 x 4 1/2 J-Bolt	.65	200

U-BOLT WITH HEX NUT



1-83-UB 178	1 7/8 x 1/2 U-Bolt w/hex nut	.50	50
1-83-UB 238	2 3/8 x 1/2 U-Bolt w/hex nut	.61	50
1-83-UB 278	2 7/8 x 1/2 U-Bolt w/hex nut	.64	50
1-83-UB 400	4" x 1/2 U-Bolt w/hex nut	.81	50
1-83-UB 658	6 5/8 x 1/2 U-Bolt w/hex nut	1.91	20

FENCE STRETCHER & GATE CLIP TOOL



1-84-FS 238	2 3/8 Fence Stretcher	2.00	10
1-84-FS 278	2 7/8 Fence Stretcher	2.00	10
1-84-GCT 001	Gate Clip Tool	8.00	10



Malleable and Semi-Steel Fittings

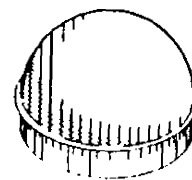
P.O. Drawer 968 Hearne, Texas 77859 (409) 279-3464 - 279-5356

FAX# 409-279-3529

Part Number	Description	Wt. Each	Std. Pkg.

SEMI-STEEL DOME CAP

3-11-DC 158	1 5/8 Semi-Steel Dome Cap	.42	100
3-11-DC 178	1 7/8 Semi-Steel Dome Cap	.58	100
3-11-DC 238	2 3/8 Semi-Steel Dome Cap	.76	50
3-11-DC 278	2 7/8 Semi-Steel Dome Cap	.98	50
3-11-DC 312	3 1/2 Semi-Steel Dome Cap	1.20	50
3-11-DC 400	4" Semi-Steel Dome Cap	1.94	25
3-11-DC 412	4 1/2 Semi-Steel Dome Cap	2.40	25
3-11-DC 658	6 5/8 Semi-Steel Dome Cap	6.36	6
3-11-DC 858	8 5/8 Semi-Steel Dome Cap	8.75	6



SEMI-STEEL LINE TOP

3-12-LT 158	1 5/8 x 1 3/8 S.S. Line Top	.84	50
3-12-LT 178	1 7/8 x 1 3/8 S.S. Line Top	.97	50
3-12-LT 1785	1 7/8 x 1 5/8 S.S. Line Top	1.12	50
3-12-LT 238	2 3/8 x 1 5/8 S.S. Line Top	1.45	25
3-12-LT 278	2 7/8 x 1 5/8 S.S. Line Top	2.40	25



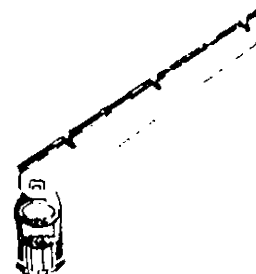
SEMI-STEEL BARBWIRE BASE

3-13-BWB 158	1 5/8 x 1 3/8 S.S. Barbwire Base	.93	50
3-13-BWB 178	1 7/8 x 1 5/8 S.S. Barbwire Base	1.64	50
3-13-BWB 238	2 3/8 x 1 5/8 S.S. Barbwire Base	1.93	50
3-13-BWB 278	2 7/8 x 1 5/8 S.S. Barbwire Base	2.12	25
3-13-BWB JRH	Jr. H x 1 5/8 S.S. Barbwire Base	1.88	25
3-13-BWB SRH	Sr. H x 1 5/8 S.S. Barbwire Base	2.12	25



SEMI-STEEL BARBWIRE BASE & STEEL ARM (ASSEMBLED)

3-14-BAC 158	1 5/8 x 1 3/8 Semi-Steel Base and Steel Arm (Assembled)	1.84	25
3-14-BAC 178	1 7/8 x 1 5/8 Semi-Steel Base and Steel Arm (Assembled)	2.55	25
3-14-BAC 238	2 3/8 x 1 5/8 Semi-Steel Base and Steel Arm (Assembled)	2.84	25
3-14-BAC 278	2 7/8 x 1 5/8 Semi-Steel Base and Steel Arm (Assembled)	3.03	25
3-14-BAC JRH	Jr. H x 1 5/8 or 1 7/8 x 1 5/8 S.S. Base and Steel Arm (Assembled)	2.79	25
3-14-BAC SRH	Sr. H x 1 5/8 or 2 3/8 x 1 5/8 S.S. Base and Steel Arm (Assembled)	3.03	25



SEMI-STEEL OFFSET RAIL END

3-15-ORE 138	1 3/8 Offset Rail End	.53	100
3-15-ORE 158	1 5/8 Offset Rail End	.67	100
3-15-ORE 178	1 7/8 Offset Rail End	.84	100

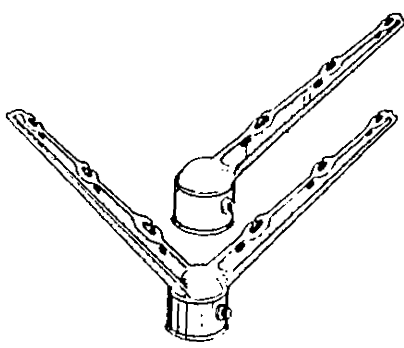
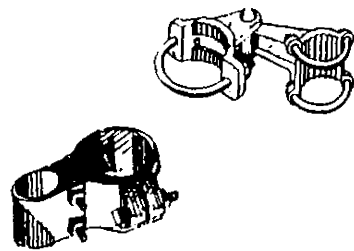


Malleable and Semi-Steel Fittings



P.O. Drawer 968 Hearne, Texas 77859 (409) 279-3464 - 279-5356

FAX# 409-279-6529

Part Number	Description	Wt. Each	Std. Pkg.
SEMI-STEEL BRACE RAIL END & COMBINATION RAIL END			
	3-16-BRE 158 1 5/8 Brace Rail End	.83	100
	3-16-CRE 158 1 5/8 Combination Rail End	.63	100
MALLEABLE CORNER ARM & V-TYPE CORNER ARM			
	3-20-CA 238 2 3/8 Malleable Corner Arm	4.20	10
	3-20-CA 278 2 7/8 Malleable Corner Arm	4.50	10
	3-20-CA 400 4" Malleable Corner Arm	5.40	8
	3-20-CAV 238 2 3/8 Mal. V-Type Corner Arm	7.10	5
	3-20-CAV 278 2 7/8 Mal. V-Type Corner Arm	7.20	5
MALLEABLE FLOOR FLANGE			
	3-21-FF 178 1 7/8 Malleable Floor Flange	4.70	8
	3-21-FF 238 2 3/8 Malleable Floor Flange	5.20	8
	3-21-FF 278 2 7/8 Malleable Floor Flange	6.50	8
MALLEABLE BACKSTOP ANGLE			
	3-22-BA 342 3" or 4" x 2" Backstop Angle	4.90	10
MALLEABLE & STEEL HINGES - INDUSTRIAL			
	3-23-MIH 278 3 x 1 5/8 or 2 Malleable 180° Hinge	4.70	12
	3-23-MIH 400 4 x 1 5/8 or 2 Malleable 180° Hinge	5.00	8
	3-23-MIH 658 6 5/8 x 2 Malleable 180° Hinge	11.00	6
	3-23-MSH 238 2 3/8 Malleable & Steel Hinge	4.80	10
	3-23-MSH 278 2 7/8 Malleable & Steel Hinge	5.00	10
	3-23-MSH 312 3 1/2 Malleable & Steel Hinge	5.20	10
	3-23-MSH 400 4" Malleable & Steel Hinge	6.30	10
	3-23-MSH 658 6 5/8 Malleable & Steel Hinge	13.80	6
	3-23-MSH 858 8 5/8 Malleable & Steel Hinge	16.30	6



Malleable and Semi-Steel Fittings

P.O. Drawer 968 Hearne, Texas 77859 (409) 279-3464 - 279-5356

FAX# 409 279-6529

Part Number	Description	Wt. Each	Std. Pkg.

180° ATTACHMENT FOR INDUSTRIAL HINGES

3-24-IHA 180	180° Attachment for Industrial Hinges	5.00	20



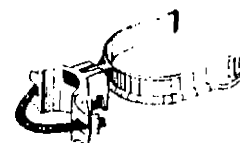
MALLEABLE GATE HOLDBACK

3-25-GHB 200	2" Malleable Gate Holdback	2.15	25



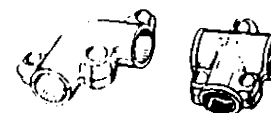
MALLEABLE DROP FORK LATCH

3-26-MFL 3813	1 3/8 x 1 3/8 Malleable Latch	1.46	25
3-26-MFL 3820	1 3/8 x 2 Malleable Latch	1.48	25
3-26-MFL 3821	1 3/8 x 2 1/2 Malleable Latch	1.52	25
3-26-MFL 3830	1 3/8 x 3 Malleable Latch	1.56	25
3-26-MFL 3831	1 3/8 x 3 1/2 Malleable Latch	1.82	25
3-26-MFL 3840	1 3/8 x 4 Malleable Latch	1.85	25
3-26-MFL 5820	1 5/8 x 2 Malleable Latch	1.57	25
3-26-MFL 5821	1 5/8 x 2 1/2 Malleable Latch	1.61	25
3-26-MFL 5830	1 5/8 x 3 Malleable Latch	1.65	25
3-26-MFL 5831	1 5/8 x 3 1/2 Malleable Latch	1.91	25
3-26-MFL 5940	1 5/8 x 4 Malleable Latch	1.94	25
3-26-MFL 7820	1 7/8 x 2 Malleable Latch	1.58	25
3-26-MFL 7821	1 7/8 x 2 1/2 Malleable Latch	1.62	25
3-26-MFL 7830	1 7/8 x 3 Malleable Latch	1.66	25
3-26-MFL 7831	1 7/8 x 3 1/2 Malleable Latch	1.92	25
3-26-MFL 7840	1 7/8 x 4 Malleable Latch	1.95	25



MALLEABLE TWO PIECE CORNER & TEE

3-27-MTC 158	1 5/8 Malleable Two Piece Corner	2.20	25
3-27-MTC 178	1 7/8 Malleable Two Piece Corner	2.60	25
3-27-MTT 158	1 5/8 Malleable Two Piece Tee	1.90	25
3-27-MTT 178	1 7/8 Malleable Two Piece Tee	2.30	25

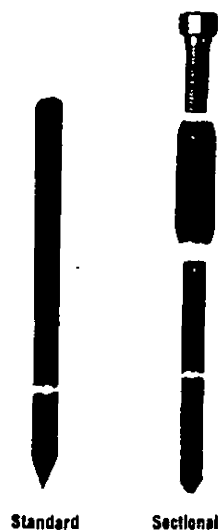


GATE CENTER REST

3-28-GCR 200	2" Gate Center Rest	3.20	5

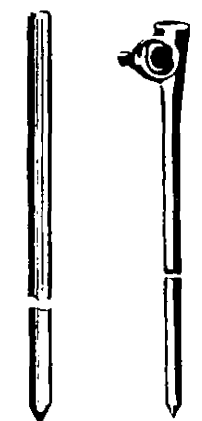


GROUND ROD, CLAMPS, WIRE



Standard

Sectional



Standard

Drive Head

Galvanized



Cast Bronze



Galvanized



Bronze
Coupling



Driving
Stud

GROUND RODS

Cop-R-Coat

Cop-R-Coat ground rods feature superior electrical conductivity and corrosion resistance. Constructed with a heavy copper coat bonded to a rigid steel core. 1/2", 3/4", 5/8" and 1" diameters in 8 ft. and longer lengths listed by Underwriters Laboratories, Inc. Cast bronze clamps are recommended to maximize service life of the Cop-R-Coat grounding system.

Galvanized

High-tensile steel for maximum driving strength is pointed, then hot-dip galvanized for long service life at lower cost. Galvanized clamps are recommended to maximize the service life of this grounding system.

Catalog Number		Nominal Size	Std. Pkg. Bdl.	Approx. Wt. per 100 Pcs.
Cop-R-Coat	Galvanized			
8425	7325	1/2" x 5'	10	330
8426	7326	1/2" x 6'	10	400
8428	7328	1/2" x 8'	10	560
8429		1/2" x 9'	10	590
8430	7330	1/2" x 10'	10	700
8436	7336	3/8" x 6'	10	600
8438	7338	3/8" x 8'	5	780
8440	7340	3/8" x 10'	5	1000
8448	7348	3/4" x 8'	5	1100
8450	7350	3/4" x 10'	5	1400
8470	7370	1" x 10'	3	2600
Sectional				
18438		3/8" x 8'	5	705
18440		3/8" x 10'	5	880
18448		3/4" x 8'	5	1035
18450		3/4" x 10'	5	1290
18470		1" x 10'	3	2325
Drive Head				
	7638	1/2" x 8'	5	826

GROUND ROD CLAMPS & FITTINGS

Threaded bronze couplings and steel driving studs for use with sectional type Cop-R-Coat ground rods for deep grounding. Cast bronze clamps U/L listed.

Catalog Number		Rod Size	Wire Size Min.	Wire Size Max.	Std. Pkg.	Wt. Per 100
Bronze	Galvanized					
8038	7912	3/8"	14 Sol.	4 Str.	200	9
8012	7912	1/2"	10 Sol.	2 Str.	100	17
8058	7958	3/8"	8 Sol.	1 Str.	100	18
8034	7934	3/4"	8 Sol.	1/0 Str.	100	25
8010		1"	8 Sol.	4/0 Str.	25	40
Fittings						
8534			3/8" Bronze Coupling		10	30
8535			1/2" Bronze Coupling		10	46
8538			1" Bronze Coupling		10	100
19534			3/8" Driving Stud		10	23
19535			1/2" Driving Stud		10	35
19536			1" Driving Stud		10	75

Other size rods and fittings available on special order

ILSCO

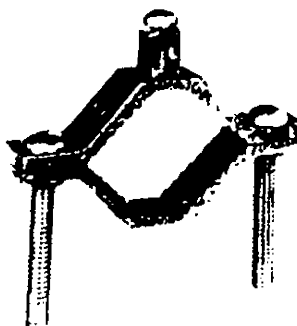
RATED FOR 600 VOLTS

TYPE BGC/BGRC

CAST BRASS GROUND CLAMP

FOR GROUNDING COPPER CONDUCTORS TO STEEL PIPE-COPPER PIPE

Connectors are fabricated from high strength cast brass.



Catalog No.	Conduit Size	Ground Wire Range	Width	Length
BGC-1	1/2-3/4-1"	10-2	5/8"	2-9/32"
BGC-2	1-1/4-1-1/2-2"	10-2	1 1/16"	3-9/16"
*BGC-1-DB	1/2-3/4-1"	10-2	5/8"	2-9/32"

*Suitable for direct burial.

CAST BRONZE GROUND ROD CLAMPS

Produced from high strength cast bronze to insure strength and durability. Suitable for burial in earth or concrete. Supplied plain finish.



Catalog No.	Ground Rod Size	Wire Range	Length	Width
BGRC-48	1/2	2-10	7/8"	3/4"
BGRC-58	5/8	1/0-8	15/16"	7/8"
BGRC-68	3/4	1/0-8	1"	1"



4730 MADISON ROAD, CINCINNATI, OHIO • 45227 • TELEPHONE 871-4000 • AREA CODE 513

Telex Number 981-065 Fax Number (513) 871-4084

ILSCO OF CANADA, LTD. • 1050 LAKESHORE ROAD EAST

CONDUCTOR		INSULATION THICKNESS (MILS)	JACKET THICKNESS (MILS)	NOMINAL O.D. (MILS)		APPROX. NET WEIGHT PER 1000' (LBS.)		AMPACITY ⁴			STANDARD PACKAGE
SIZE ⁵ (AWG or KCM)	NO. STRANDS			SOL.	STR.	SOL.	STR.	60°C	75°C	90°C	
								MTW ¹	THWN	THHN	
**14	19*	15	4	102	110	15	16	15	15	15	DNF ²
**12	19*	15	4	119	129	23	24	20	20	20	DNF ²
**10	19*	20	4	150	163	37	38	30	30	30	DOF ³
** 8	19	30	5		211		62	40	50	55	F
** 6	19	30	5		247		94	55	65	75	E
4	19	40	6		320		151	70	85	95	C
2	19	40	6		379		232	95	115	130	C
1	19	50	7		436		297	110	130	150	B
1/0	19	50	7		476		369	125	150	170	B
2/0	19	50	7		520		458	145	175	195	B
3/0	19	50	7		570		570	165	200	225	B
4/0	19	50	7		626		711	195	230	260	B
250	37	60	8		694		849	215	255	290	B
300	37	60	8		747		1009	240	285	320	B
350	37	60	8		797		1170	260	310	350	B
400	37	60	8		842		1329	280	335	380	B
500	37	60	8		925		1648	320	380	430	B
600	61	70	9		1026		1987	355	420	475	C
750	61	70	9		1126		2464	400	475	535	C
1000	61	70	9		1275		3257	455	545	615	C

¹ Solid construction available in sizes 14, 12, & 10 as Types THHN or THWN only

² Also suitable for 105°C appliance wiring material (AWM)

³ Per NFPA Standard No. 79, 1980 edition.

⁴ Four 500' spools per carton.

⁵ Two 500' spools per carton.

⁶ Ampacities shown are for not more than 3 single conductors in raceway in free air per table 310-16 of the National Electrical Code, 1987 edition. For other applications refer to applicable tables 310-17 through 310-28

⁷ All sizes shall be rated VW-1, 250 kcmil and larger sizes shall be rated for cable tray (CT) use.

STANDARD PACKAGE CODE.

B — 1000' Reel

C — 500' Reel

E — 1000' Spool

F — 500' Spool

N — 2000' Carton

O — 1000' Carton

D — 2500' Spool

THHN or THWN or MTW

RECOMMENDED SAMPLE SPECIFICATION: (MTW or THHN or THWN)

Conductors shall be UL Type "MTW or THHN or THWN," suitable for operations at 600 volts as specified in the National Electrical Code, at conductor temperatures not to exceed 60°C when exposed to oil or coolant, 90°C in dry locations. Conductors shall be annealed copper, insulated with high-heat and moisture resistant PVC, jacketed with abrasion, moisture, gasoline, and oil resistant nylon or UL-listed equivalent, as manufactured by Southwire Company or approved equal.

(AWM)

Conductors shall be UL Type "THHN or THWN or MTW or AWM," suitable for operation at 600 volts, as specified in the National Electrical Code, at conductor temperatures not to exceed 105°C in dry locations.

FOR ADDITIONAL INFORMATION

For additional information on this or any other Southwire product, contact your Southwire representative, or Southwire Company, Distributor Sales, in Carrollton, Georgia.

**SOUTHWIRE
COMPANY**

Carrollton, Georgia 30119-0001
404 832-4242 • Telex 54-2759

MADE
IN THE
USA

THHN

Size No. 4 AWG

Thermoplastic Insulated, Sheathed With Nylon or UL-listed equivalent.

Heat, Moisture, Oil & Gasoline Resistant.

600 volt. Copper.

All stranded sizes rated THWN & MTW 105°C AWM in sizes 14-6 AWG.

All sizes rated VW-1, CT use in sizes 250 kcmil and larger.



APPLICATIONS

Southwire Type THHN or THWN or MTW conductors may be used as specified in the National Electrical Code¹, at conductor temperatures not to exceed 60°C when exposed to oil or coolant, 75°C in wet locations, 90°C in dry locations. Conductor temperatures not to exceed 105°C in dry locations when rated AWM and used as appliance wiring material. Voltage rating for all applications is 600 volts.

SPECIFICATIONS

Southwire Type THHN or THWN or MTW (also AWM) meets or exceeds all applicable ASTM specifications, UL standard 83, UL standard 1063 (MTW), Federal Specification J-C-30A, and requirements of the National Electrical Code.

CONSTRUCTION

Southwire Type THHN or THWN or MTW copper conductors are annealed (soft) copper, insulated with a tough, heat and moisture resistant polyvinyl chloride (PVC), over which a nylon (polyamide) or UL-listed equal jacket is applied. AWG 14 through AWG 6, 19 strand, may be rated AWM for appliance wiring material. Available in black, white, red, blue, green, yellow, brown, orange, or grey. Some colors standard, some subject to economic order quantity. Sizes 1-19 through 1,000 kcmil available in black only.

SOUTHWIRE
COPPER BUILDING WIRE

¹1987 Edition.



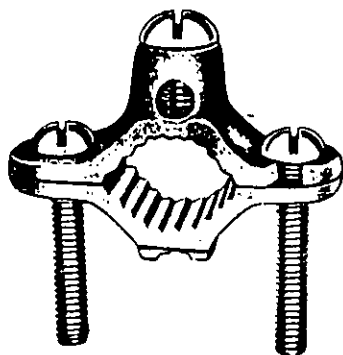
ITT

GROUNDING

GROUND CLAMPS

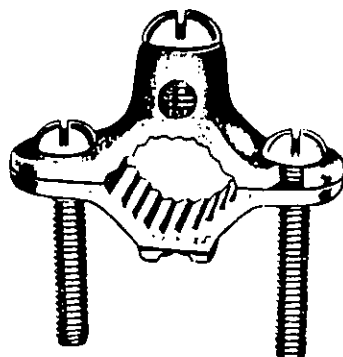
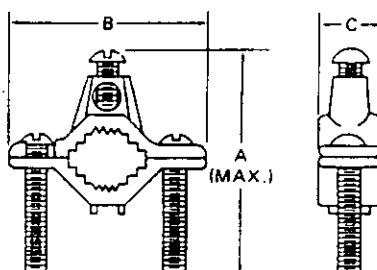
CAST BRONZE CLAMPS

- For connecting grounding conductor to water pipe or copper tube.
- Cast of high strength, highly conductive copper alloy.
- Screws plated for corrosion resistance.



Catalog Number	Water Pipe Size	Conductor Range		Dimensions (inches)		
		Max.	Min.	A (max.)	B	C
J	1/2 to 1	#2 str.	#10 sol.	2 1/4	2 1/2	1 1/2
J2	1 1/2 to 2	#2 str.	#10 sol.	3 1/4	3 1/2	1 1/2
J2124	2 1/2 to 4	#4 str.	#10 sol.	6	6 1/4	1
J6	4 1/4 to 6	#4 str.	#10 sol.	7 1/4	8 1/8	1

Add suffix "C" to Catalog Number to specify plating.

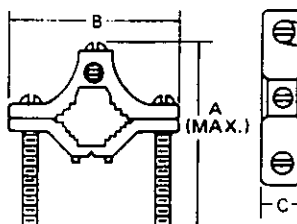


BUDGET PRICE CAST BRONZE CLAMP

- Similar to above but lighter in construction.

Catalog Number	Water Pipe Size	Conductor Range		Dimensions (inches)		
		Max.	Min.	A	B	C
JJR	1/2 to 1	#4 str.	#10 sol.	2 1/2	2 3/4	1 1/2

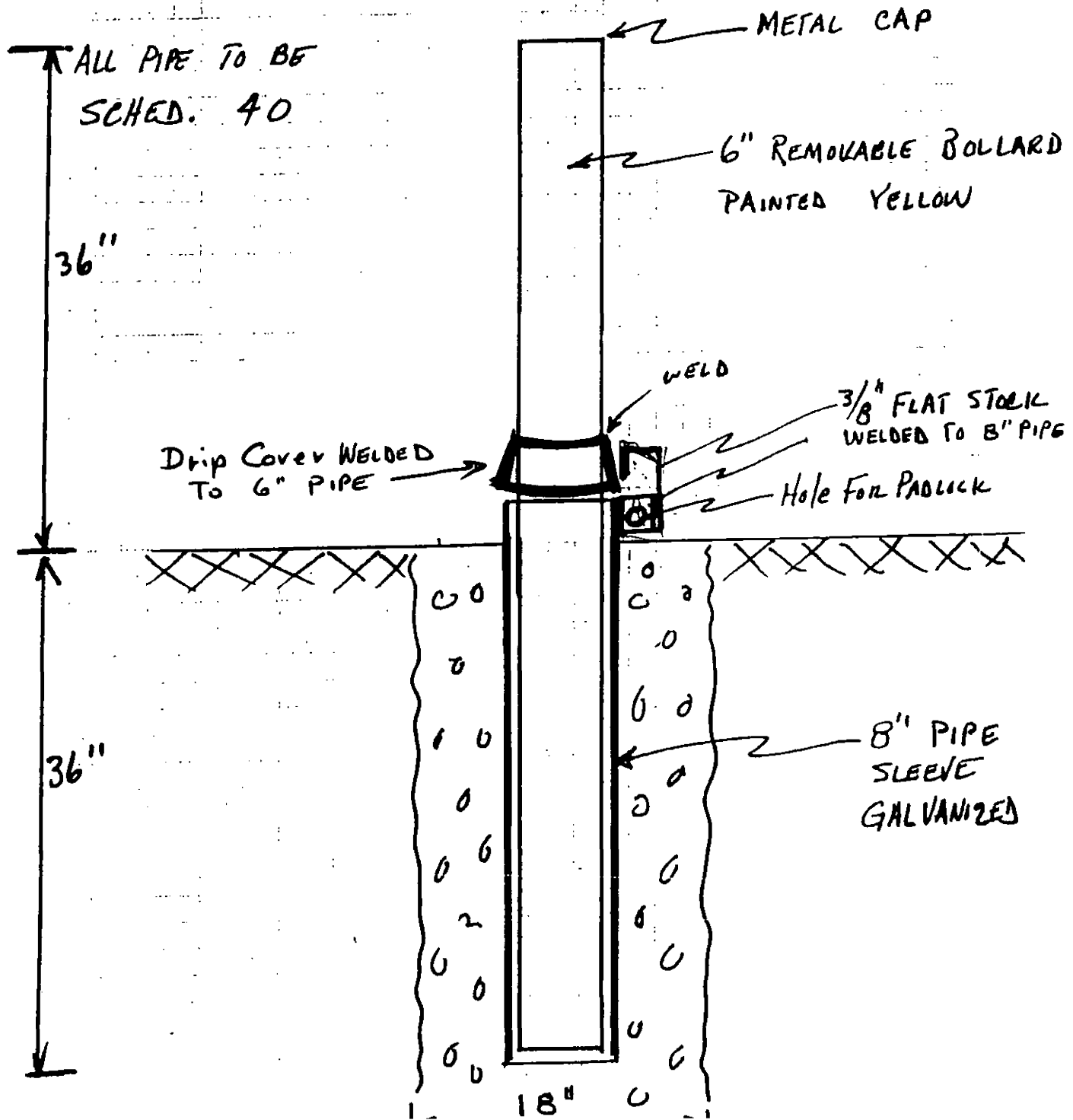
Add suffix "C" to Catalog Number to specify plating.



BOLLARD DETAIL

GEO-CON INC.

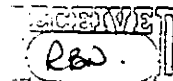
By WJZ Date 10/26/92 Project ARCO SINCLAIR REFINERY Proj. No. PI-0129
Chkd. By _____ Date _____ Subject REMOVABLE BOLLARD Sheet No. _____ of _____



GAS VENT STONE

- **SUBMITTAL INFORMATION**
- **GEOTECHNICAL TESTS**
 - Flat Elongated and Soft Aggregate Tests
 - Gradation Analyses
 - Magnesium Sulfate Soundness (5 cycles) Tests
- **CHEMICAL ANALYSES**
 - PCB's
 - Dioxins
 - Priority Pollutants
 - Paste pH

SUBMITTAL INFORMATION



P1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 6
CONTRACT NO. C91028-003-01
BORROW SOURCE AND COMPLIANCE TESTS
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

1. Geotechnical Compliance Tests

As per the original submittal for the gas vent stone, attached are the results of the following additional geotechnical tests:

<u>Tests</u>	<u>No. of Tests Attached</u>	<u>No. of Tests Submitted to Date</u>	<u>No. of Tests Required</u>
Exclusion of flat, elongated and soft aggregates	1	1	1
Material Gradation	1	2	2
Magnesium Sulfate Soundness (5 cycles)	1	1	2

The results of the remaining magnesium sulfate soundness test will be submitted upon completion.

2. Chemical Sampling & Testing

Attached are the test results for the first set of chemical contamination tests. The sample was tested as per specification for the following chemical contaminants: PCB's, Dioxins, Priority Pollutants, and Paste pH. (These results also include the results of the chemical analysis performed on the topsoil which will be used on the site. These results should be disregarded for the purposes of this submittal.) It is currently anticipated, based on the estimated quantity of gas vent stone, that one additional set of tests will be performed on the stone. Results of these tests will be submitted upon completion.



GEOSYNTEC CONSULTANTS

ARCO 

SUBMITTAL COVER SHEET

1992 year

PROJECT: CELA CAP

PROJECT NO.: GQ3201

TASK NO.: 0263

LOCATION: WELLSVILLE, NEW YORK

CONTRACTOR: GEO-CON, INC. (C91028-003-01)

SUBMITTAL NO.: 280004

REVISION NO.: ADD No. 23

SUBMITTAL TITLE: Borrow Source & Compliance Tests - Gas Vent Stone

DATE RECEIVED:

9/15/92
(day/month/yr)

DATE REVIEWED:

10/15/92
(day/month/yr)

RESUBMITTAL REQUIRED:

☐

YES

☒

NO

DATE APPROVED:

(day/month/yr)

COMMENTS:

~~being~~ *Expenditure*

Quality control management plan Section 4.15 for gas vent stone has allowable magnesium sulfate soundness weight loss by ASTM C88-90 of 10 percent weight loss from test 6.5 percent. ~~Result acceptable~~

DISTRIBUTION:

BY:

R. J. [Signature]
GEOSYNTEC CONSULTANTS

BY:

[Signature]
ARCO

Geotechnical Compliance Tests

As per the previous submittals for the gas vent stone, attached is the result of the following additional geotechnical tests:

<u>Tests</u>	<u>No. of Tests Attached</u>	<u>No. of Tests Submitted To Date</u>	<u>No. of Tests Required</u>
Exclusion of Flat, elongated and soft aggregates	1	2	1
Material Gradation	0	2	2
Magnesium Sulfate Soundness (5 cycles)	1	2	2
Permeability	0	1	1

This completes all required geotechnical testing of the gas vent stone.

GEOTECHNICAL TESTS

- **FLAT ELONGATED AND SOFT AGGREGATE TESTS**
- **GRADATION ANALYSES**
- **MAGNESIUM SULFATE SOUNDNESS (5 CYCLES) TESTS**
- **PERMEABILITY TESTS**

Client: GEO-CON, Inc.
Project: Sinclair Refinery
Location: Wellsville, NY

GTX No: GTX-234
Date: 08-19-1992
Page: 2 of 4

Sample: 60 lb sample # 2 gravel

Gradation

Sieve Size	Percent Retained	Percent Passing
1 1/2"	0	100
1"	2	98
3/4"	37	63
1/2"	97	3
3/8"	100	0
#4	-	-
#8	-	-

Soundness:

Average Weight Lost: 4.23%
Flat Particles: Negligible
Elongated Particles: Negligible

Method of testing - ASTM Designation C88 Standard Test Method for Soundness of Aggregates by use of magnesium sulfate. Visual examination for flat or elongated particles as described under ASTM C125 Standard Terminology Relating to Concrete and Concrete Aggregates with a specified value of three

GeoTesting Express

66 Commonwealth Avenue
Concord, MA 01742
508-369-0229 FAX 508-369-4392

SOUNDNESS TEST OF AGGREGATE
GEO-CON, INCORPORATED
SINCLAIR REFINERY
WELLSVILLE, NEW YORK

SPECIMENS

One 13 lb. sample 3/4" nominal size gravel as shipped to our laboratory by you.

METHOD OF TEST

ASTM Designation C88 Standard Test Method for Soundness of Aggregates by use of magnesium sulfate. Visual examination for flat or elongated particles as described under ASTM C125 Standard Terminology Relating to Concrete and Concrete Aggregates with a specified value of three.

RESULTS

Gradation:	Sample
1 1/2	0%
1	4
3/4	38
1/2	98
3/8	100

Soundness:			
Sieve Sizes	Grada-	Indiv.	Wt. Ave.
Pass. Ret. On	tion	Loss	Loss
1" 3/4"	34	4.3	1.46
3/4 1/2	60	8.4	5.04
Totals	94		6.50

Flat and Elongated particles: Negligible

REMARKS

ASTM Designation C33, Standard Specification for Concrete Aggregates, Table 3, states that coarse aggregate subjected to five cycles of the Magnesium Sulfate soundness test shall have a weighted average loss not greater than 18%. Our Standard Specification requirement is 5% maximum. Therefore, these samples are considered reasonable.



GEOSYNTEC CONSULTANTS

ARCO

SUBMITTAL COVER SHEET

1992 year

PROJECT: CELA CAP

PROJECT NO.: GQ3201

TASK NO.: 02

LOCATION: WELLSVILLE, NEW YORK

CONTRACTOR: GEO-CON, INC. (C91028-003-01)

SUBMITTAL NO.:

28QCP4

REVISION NO.:

ADD 18

SUBMITTAL TITLE:

GAS VENT STONE BORROW SOURCE &
COMPLIANCE TEST, PERMEABILITY DATA

DATE RECEIVED:

26/07/92
(day/month/yr)

DATE REVIEWED:

29/07/92
(day/month/yr)

RESUBMITTAL REQUIRED:

☐

YES

☒

NO

DATE APPROVED:

29/07/92
(day/month/yr)

COMMENTS:

Acceptable > 1 cm/sec.

DISTRIBUTION:

BY:

GEOSYNTEC CONSULTANTS

BY:

ARCO

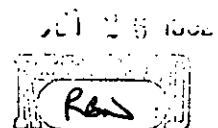
P1-0129

SUBMITTAL 28QC04
ADDENDUM NO. 18
CONTRACT NO. C91028-003-01
GAS VENT STONE BORROW SOURCE AND COMPLIANCE TESTS
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor



Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

Geotechnical Testing

Attatched is the result of the permeability test which was performed on the gas vent stone at the Sinclair Refinery site. This test was requested by Geosyntec as a condition of its acceptance.

PERMEABILITY TEST SUMMARY

CLIENT: GEO-CON		JOB NUMBER: 234	BORING:
SITE: Sinclair Refinery		DATE: 8-31-82	SAMPLE: Rock
SPECIMEN TYPE: BAG		TEST TYPE: Rigid Wall	
SPECIMEN SIZE, L: 9" D: 3"		GRADIENT: 1	
VISUAL DESCRIPTION: Crushed Rock			
INITIAL CONDITIONS	WET UNIT WEIGHT, pcf		---
	DRY UNIT WEIGHT, pcf		---
	WATER CONTENT, %		---
	VOID RATIO, e_v		---
AFTER CONSOLIDATION	CONFINING STRESS, psi		---
	BACKPRESSURE, psi		---

PERMEABILITY: > 1 cm/sec

NOTE: Equipment limited to permeability ≤ 1 cm/sec

CHEMICAL ANALYSES

- **PCB's**
- **DIOXINS**
- **PRIORITY POLLUTANTS**
- **PASTE pH**

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

August 14, 1992

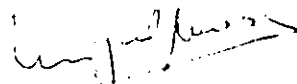
Mr. Chris Bailey
Geo-Con, Inc.
4075 Monroeville Blvd.
Corporate One
Building II, Suite 400
Monroeville, PA 15146

Dear Mr. Bailey:

Enclosed is the data report of results for the analyses of
samples received at Ceimic on August 1, 1992.

Please call if you have any questions regarding this data.

Sincerely,



Miguel Muzzio
Organic Laboratory
Manager

MM/11

enc.

VOLATILE ORGANIC ANALYSES

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

SURROGATE RECOVERY SUMMARY

Volatile Organics Analysis

Client: Geo-Con, Inc.

Date Samples Received: 8/01/92

Project No.: 920385

Matrix: Soil

Surrogate Compound	Samples				QC Limits
	Method Blank #1	Method Blank #2	-01	-03	
1,2-Dichloroethane-d4	104%	103%	103%	104%	70 - 121%
Toluene-d8	102	104	102	101	84 - 138
Bromofluorobenzene	98	95	97	99	59 - 113

Reported by: CB

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**VOLATILE ORGANICS
PRIORITY POLLUTANT LIST
EPA Method 624/8240**

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #1

Laboratory ID: V70803-B1

Date Sample Received: NA

Date Sample Prepared: 8/03/92

Date Sample Analyzed: 8/03/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Acrolein	ND	100
Acrylonitrile	ND	100
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	10
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroethane	ND	10
Chlorodibromomethane	ND	5
2-Chloroethylvinyl ether	ND	5
Chloroform	ND	5
Chloromethane	ND	10
1,2-Dichlorobenzene	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethane	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethene	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethyl benzene	ND	5

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**VOLATILE ORGANICS
PRIORITY POLLUTANT LIST
EPA Method 624/8240**

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #1

Laboratory ID: V70803-B1

Target Analyte	Sample Concentration	Method Reporting Limits
Methylene Chloride	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	10
Vinyl Chloride	ND	10

NA = Not applicable

ND = Not Detected

Reported By: CB

Approved by: MM

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**VOLATILE ORGANICS
PRIORITY POLLUTANT LIST
EPA Method 624/8240**

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #2

Laboratory ID: V70811-B1

Date Sample Received: NA

Date Sample Prepared: 8/11/92

Date Sample Analyzed: 8/11/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Acrolein	ND	100
Acrylonitrile	ND	100
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	10
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroethane	ND	10
Chlorodibromomethane	ND	5
2-Chloroethylvinyl ether	ND	5
Chloroform	ND	5
Chloromethane	ND	10
1,2-Dichlorobenzene	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethane	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethene	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethyl benzene	ND	5

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**VOLATILE ORGANICS
PRIORITY POLLUTANT LIST**

EPA Method 624/8240

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #2

Laboratory ID: V70811-B1

Target Analyte	Sample Concentration	Method Reporting Limits
Methylene Chloride	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	10
Vinyl Chloride	ND	10

NA = Not applicable

ND = Not Detected

Reported By: CB

Approved by: HM

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**VOLATILE ORGANICS
PRIORITY POLLUTANT LIST
EPA Method 624/8240**

Client: Geo-Con, Inc.

Client Sample ID: Top Soil

Laboratory ID: 920385-01

Date Sample Received: 8/01/92

Date Sample Prepared: 8/03/92

Date Sample Analyzed: 8/03/92

Concentration in: ug/kg (ppb)*

Target Analyte	Sample Concentration	Method Reporting Limits
Acrolein	ND	140
Acrylonitrile	ND	140
Benzene	ND	7
Bromodichloromethane	ND	7
Bromoform	ND	7
Bromomethane	ND	14
Carbon tetrachloride	ND	7
Chlorobenzene	ND	7
Chloroethane	ND	14
Chlorodibromomethane	ND	7
2-Chloroethylvinyl ether	ND	7
Chloroform	ND	7
Chloromethane	ND	14
1,2-Dichlorobenzene	ND	7
1,3-Dichlorobenzene	ND	7
1,4-Dichlorobenzene	ND	7
1,1-Dichloroethane	ND	7
1,2-Dichloroethane	ND	7
trans-1,2-Dichloroethene	ND	7
1,1-Dichloroethene	ND	7
1,2-Dichloropropane	ND	7
cis-1,3-Dichloropropene	ND	7
trans-1,3-Dichloropropene	ND	7
Ethyl benzene	ND	7

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**VOLATILE ORGANICS
PRIORITY POLLUTANT LIST
EPA Method 624/8240**

Client: Geo-Con, Inc.

Client Sample ID: Top Soil

Laboratory ID: 920385-01

Target Analyte	Sample Concentration	Method Reporting Limits
Methylene Chloride	ND	7
1,1,2,2-Tetrachloroethane	ND	7
Tetrachloroethene	ND	7
Toluene	ND	7
1,1,1-Trichloroethane	ND	7
1,1,2-Trichloroethane	ND	7
Trichloroethene	ND	7
Trichlorofluoromethane	ND	14
Vinyl Chloride	ND	14

ND = Not Detected

+ Dry weight basis, solid = 73%

Reported By: CB

Approved by: 814

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

VOLATILE ORGANICS

PRIORITY POLLUTANT LIST

EPA Method 624/8240

Client: Geo-Con, Inc.

Client Sample ID: #2 Stone

Laboratory ID: 920385-03

Date Sample Received: 8/01/92

Date Sample Prepared: 8/11/92

Date Sample Analyzed: 8/11/92

Concentration in: ug/kg (ppb)*

Target Analyte	Sample Concentration	Method Reporting Limits
Acrolein	ND	100
Acrylonitrile	ND	100
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	10
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroethane	ND	10
Chlorodibromomethane	ND	5
2-Chloroethylvinyl ether	ND	5
Chloroform	ND	5
Chloromethane	ND	10
1,2-Dichlorobenzene	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethane	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethene	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethyl benzene	ND	5

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**VOLATILE ORGANICS
PRIORITY POLLUTANT LIST
EPA Method 624/8240**

Client: Geo-Con, Inc.

Client Sample ID: #2 Stone

Laboratory ID: 920385-03

Target Analyte	Sample Concentration	Method Reporting Limits
Methylene Chloride	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	10
Vinyl Chloride	ND	10

ND = Not Detected

+ Dry weight basis, solid = 99%

Reported By: CB

Approved by: MM

SEMIVOLATILE ORGANIC ANALYSES

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

SURROGATE RECOVERY SUMMARY

Semivolatile Organics

Client: Geo-Con, Inc.

Project No.: 920385

Date Samples Received: 8/01/92

Matrix: Soil

Surrogate Compound	Method Blank #1	Samples		QC Limits
		Method Blank #2	-01 -03	
2-Fluorophenol	96%	76%	87% 70%	25-110%
2-Chlorophenol-d4*	94	74	82 76	20-110
Phenol-d5	97	75	84 75	24-110
2,4,6-Tribromophenol	97	95	86 99	19-123
1,2-Dichlorobenzene-d4*	106	94	92 94	20-110
Nitrobenzene-d5	102	80	90 81	23-114
2-Fluorobiphenyl	91	92	81 94	30-116
Terphenyl-d14	109	85	100 101	18-141

* Advisory

Reported by: 

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #1

Laboratory ID: S0803-B2

Date Sample Received: NA

Date Sample Prepared: 8/03/92

Date Sample Analyzed: 8/08/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Phenol	ND	330
Bis(2-chloroethyl)ether	ND	330
2-Chlorophenol	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl)ether	ND	330
n-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
2-Nitrophenol	ND	330
2,4-Dimethylphenol	ND	330
Bis(2-chloroethoxy)methane	ND	330
2,4-Dichlorophenol	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
Hexachlorobutadiene	ND	330
4-Chloro-3-methylphenol	ND	330
Hexachlorocyclopentadiene	ND	330
2,4,6-Trichlorophenol	ND	830
2-Chloronaphthalene	ND	830

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #1

Laboratory ID: S0803-B2

Target Analyte	Sample Concentration	Method Reporting Limits
Dimethylphthalate	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
2,4-Dinitrophenol	ND	830
4-Nitrophenol	ND	830
2,4-Dinitrotoluene	ND	330
2,6-Dinitrotoluene	ND	330
Diethyl phthalate	ND	330
4-Chlorophenyl phenyl ether	ND	330
Fluorene	ND	330
4,6-Dinitro-2-methylphenol	ND	830
n-Nitrosodiphenylamine	ND	330
4-Bromophenyl phenyl ether	ND	330
Hexachlorobenzene	ND	330
Pentachlorophenol	ND	830
Phenanthrene	ND	330
Anthracene	ND	330
Di-n-butylphthalate	ND	330
Fluoranthene	ND	330
Benzidine	ND	3,300
Pyrene	ND	330
Butylbenzylphthalate	ND	330
3,3'-Dichlorobenzidine	ND	330
Benzo(a)anthracene	ND	330
Bis(2-ethylhexyl)phthalate	ND	330
Chrysene	ND	330
Di-n-octylphthalate	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330

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"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #1

Laboratory ID: S0803-B2

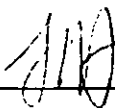
Target Analyte	Sample Concentration	Method Reporting Limits
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330
1,2-Diphenylhydrazine	ND	330
N-Nitrosodimethylamine	ND	330

NA = Not applicable

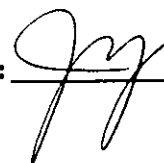
ND = Not detected

Dioxin Screen: No dioxin isomers detected.

Reported by: _____



Approved by: _____



**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #2

Laboratory ID: S0811-B2

Date Sample Received: NA

Date Sample Prepared: 8/11/92

Date Sample Analyzed: 8/12/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Phenol	ND	330
Bis(2-chloroethyl) ether	ND	330
2-Chlorophenol	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl) ether	ND	330
n-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
2-Nitrophenol	ND	330
2,4-Dimethylphenol	ND	330
Bis(2-chloroethoxy) methane	ND	330
2,4-Dichlorophenol	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
Hexachlorobutadiene	ND	330
4-Chloro-3-methylphenol	ND	330
Hexachlorocyclopentadiene	ND	330
2,4,6-Trichlorophenol	ND	830
2-Chloronaphthalene	ND	830

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #2

Laboratory ID: S0811-B2

Target Analyte	Sample Concentration	Method Reporting Limits
Dimethylphthalate	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
2,4-Dinitrophenol	ND	830
4-Nitrophenol	ND	830
2,4-Dinitrotoluene	ND	330
2,6-Dinitrotoluene	ND	330
Diethyl phthalate	ND	330
4-Chlorophenyl phenyl ether	ND	330
Fluorene	ND	330
4,6-Dinitro-2-methylphenol	ND	830
n-Nitrosodiphenylamine	ND	330
4-Bromophenyl phenyl ether	ND	330
Hexachlorobenzene	ND	330
Pentachlorophenol	ND	830
Phenanthrene	ND	330
Anthracene	ND	330
Di-n-butylphthalate	ND	330
Fluoranthene	ND	330
Benzidine	ND	3,300
Pyrene	ND	330
Butylbenzylphthalate	ND	330
3,3'-Dichlorobenzidine	ND	330
Benzo(a)anthracene	ND	330
Bis(2-ethylhexyl)phthalate	ND	330
Chrysene	ND	330
Di-n-octylphthalate	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330

**CEIMIC
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"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #2

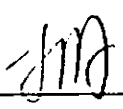
Laboratory ID: S0811-B2

Target Analyte	Sample Concentration	Method Reporting Limits
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330
1,2-Diphenylhydrazine	ND	330
N-Nitrosodimethylamine	ND	330

NA = Not applicable

ND = Not detected

Dioxin Screen: No dioxin isomers detected.

Reported by: 

Approved by: 

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Top Soil

Laboratory ID: 920385-01

Date Sample Received: 8/01/92

Date Sample Prepared: 8/03/92

Date Sample Analyzed: 8/08/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Phenol	ND	450
Bis(2-chloroethyl) ether	ND	450
2-Chlorophenol	ND	450
1,3-Dichlorobenzene	ND	450
1,4-Dichlorobenzene	ND	450
1,2-Dichlorobenzene	ND	450
Bis(2-chloroisopropyl) ether	ND	450
n-Nitroso-di-n-propylamine	ND	450
Hexachloroethane	ND	450
Nitrobenzene	ND	450
Isophorone	ND	450
2-Nitrophenol	ND	450
2,4-Dimethylphenol	ND	450
Bis(2-chloroethoxy) methane	ND	450
2,4-Dichlorophenol	ND	450
1,2,4-Trichlorobenzene	ND	450
Naphthalene	ND	450
Hexachlorobutadiene	ND	450
4-Chloro-3-methylphenol	ND	450
Hexachlorocyclopentadiene	ND	450
2,4,6-Trichlorophenol	ND	1,100
2-Chloronaphthalene	ND	1,100

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Top Soil

Laboratory ID: 920385-01

Target Analyte	Sample Concentration	Method Reporting Limits
Dimethylphthalate	ND	450
Acenaphthylene	ND	450
Acenaphthene	ND	450
2,4-Dinitrophenol	ND	1,100
4-Nitrophenol	ND	1,100
2,4-Dinitrotoluene	ND	450
2,6-Dinitrotoluene	ND	450
Diethyl phthalate	ND	450
4-Chlorophenyl phenyl ether	ND	450
Fluorene	ND	450
4,6-Dinitro-2-methylphenol	ND	1,100
n-Nitrosodiphenylamine	ND	450
4-Bromophenyl phenyl ether	ND	450
Hexachlorobenzene	ND	450
Pentachlorophenol	ND	1,100
Phenanthrene	ND	450
Anthracene	ND	450
Di-n-butylphthalate	ND	450
Fluoranthene	ND	450
Benzidine	ND	4,500
Pyrene	ND	450
Butylbenzylphthalate	ND	450
3,3'-Dichlorobenzidine	ND	450
Benzo(a)anthracene	ND	450
Bis(2-ethylhexyl)phthalate	ND	450
Chrysene	ND	450
Di-n-octylphthalate	ND	450
Benzo(b)fluoranthene	ND	450
Benzo(k)fluoranthene	ND	450

**CEIMIC
CORPORATION**
"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Top Soil

Laboratory ID: 920385-01

Target Analyte	Sample Concentration	Method Reporting Limits
Benzo(a)pyrene	ND	450
Indeno(1,2,3-cd)pyrene	ND	450
Dibenzo(a,h)anthracene	ND	450
Benzo(g,h,i)perylene	ND	450
1,2-Diphenylhydrazine	ND	450
N-Nitrosodimethylamine	ND	450

ND = Not detected

Dioxin Screen: No dioxin isomers detected.

Reported by: 

Approved by: 

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: #2 STONE

Laboratory ID: 920385-03

Date Sample Received: 8/01/92

Date Sample Prepared: 8/11/92

Date Sample Analyzed: 8/12/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Phenol	ND	340
Bis(2-chloroethyl)ether	ND	340
2-Chlorophenol	ND	340
1,3-Dichlorobenzene	ND	340
1,4-Dichlorobenzene	ND	340
1,2-Dichlorobenzene	ND	340
Bis(2-chloroisopropyl)ether	ND	340
n-Nitroso-di-n-propylamine	ND	340
Hexachloroethane	ND	340
Nitrobenzene	ND	340
Isophorone	ND	340
2-Nitrophenol	ND	340
2,4-Dimethylphenol	ND	340
Bis(2-chloroethoxy)methane	ND	340
2,4-Dichlorophenol	ND	340
1,2,4-Trichlorobenzene	ND	340
Naphthalene	ND	340
Hexachlorobutadiene	ND	340
4-Chloro-3-methylphenol	ND	340
Hexachlorocyclopentadiene	ND	340
2,4,6-Trichlorophenol	ND	850
2-Chloronaphthalene	ND	850

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: #2 STONE

Laboratory ID: 920385-03

Target Analyte	Sample Concentration	Method Reporting Limits
Dimethylphthalate	ND	340
Acenaphthylene	ND	340
Acenaphthene	ND	340
2,4-Dinitrophenol	ND	850
4-Nitrophenol	ND	850
2,4-Dinitrotoluene	ND	340
2,6-Dinitrotoluene	ND	340
Diethyl phthalate	ND	340
4-Chlorophenyl phenyl ether	ND	340
Fluorene	ND	340
4,6-Dinitro-2-methylphenol	ND	850
n-Nitrosodiphenylamine	ND	340
4-Bromophenyl phenyl ether	ND	340
Hexachlorobenzene	ND	340
Pentachlorophenol	ND	850
Phenanthrene	ND	340
Anthracene	ND	340
Di-n-butylphthalate	ND	340
Fluoranthene	ND	340
Benzidine	ND	3,400
Pyrene	ND	340
Butylbenzylphthalate	ND	340
3,3'-Dichlorobenzidine	ND	340
Benzo(a)anthracene	ND	340
Bis(2-ethylhexyl)phthalate	ND	340
Chrysene	ND	340
Di-n-octylphthalate	ND	340
Benzo(b)fluoranthene	ND	340
Benzo(k)fluoranthene	ND	340

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: #2 STONE

Laboratory ID: 920385-03

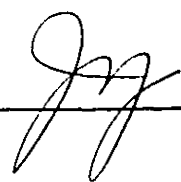
Target Analyte	Sample Concentration	Method Reporting Limits
Benzo(a)pyrene	ND	340
Indeno(1,2,3-cd)pyrene	ND	340
Dibenzo(a,h)anthracene	ND	340
Benzo(g,h,i)perylene	ND	340
1,2-Diphenylhydrazine	ND	340
N-Nitrosodimethylamine	ND	340

NA = Not applicable

ND = Not detected

Dioxin Screen: No dioxin isomers detected.

Reported by: 

Approved by: 

PCB ANALYSES

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides Analysis**

Client: Geo-Con, Inc.

Date Samples Received: 8/01/92

Project No.: 920385

Client ID	Laboratory ID	TCX Recovery	DCB Recovery
Top Soil	920385-01	92%	82%
#2 Stone	920385-03	95	55
<u>QA/QC</u>			
Method Blank #1	P0803-B2	100%	90%
Method Blank #2	P0811-B2	92	52
Laboratory Control Spike	P0803-LCS2	100	90

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

Reported by: G. Bertman

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

POLYCHLORINATED BIPHENYLS (PCBs)

EPA Method 608/8080

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #1

Laboratory ID: P0803-B2

Date Sample Received: NA

Date Sample Prepared: 8/03/92

Date Sample Analyzed: 8/05/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Aroclor-1016	ND	33
Aroclor-1221	ND	66
Aroclor-1232	ND	33
Aroclor-1242	ND	33
Aroclor-1248	ND	33
Aroclor-1254	ND	33
Aroclor-1260	ND	33

NA = Not applicable

ND = Not detected

Reported by: CRodman

Approved by: [Signature]

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

POLYCHLORINATED BIPHENYLS (PCBs)

EPA Method 608/8080

Client: Geo-Con, Inc.

Client Sample ID: Method Blank #2

Laboratory ID: P0811-B2

Date Sample Received: NA

Date Sample Prepared: 8/11/92

Date Sample Analyzed: 8/12/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Aroclor-1016	ND	33
Aroclor-1221	ND	66
Aroclor-1232	ND	33
Aroclor-1242	ND	33
Aroclor-1248	ND	33
Aroclor-1254	ND	33
Aroclor-1260	ND	33

NA = Not applicable

ND = Not detected

Reported by: G. Redman

Approved by: H. P. [Signature]

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

POLYCHLORINATED BIPHENYLS (PCBs)

EPA Method 608/8080

Client: Geo-Con, Inc.

Client Sample ID: Top Soil

Laboratory ID: 920385-01

Date Sample Received: 8/01/92

Date Sample Prepared: 8/03/92

Date Sample Analyzed: 8/05/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Aroclor-1016	ND	45
Aroclor-1221	ND	90
Aroclor-1232	ND	45
Aroclor-1242	ND	45
Aroclor-1248	ND	45
Aroclor-1254	ND	45
Aroclor-1260	ND	45

ND = Not detected

Reported by: J. Rodman

Approved by: Henry P. [Signature]

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

POLYCHLORINATED BIPHENYLS (PCBs)

EPA Method 608/8080

Client: Geo-Con, Inc.

Client Sample ID: #2 Stone

Laboratory ID: 920385-03

Date Sample Received: 8/01/92

Date Sample Prepared: 8/11/92

Date Sample Analyzed: 8/12/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Aroclor-1016	ND	36
Aroclor-1221	ND	71
Aroclor-1232	ND	36
Aroclor-1242	ND	36
Aroclor-1248	ND	36
Aroclor-1254	ND	36
Aroclor-1260	ND	36

ND = Not detected

Reported by: J. Rodman

Approved by: Henry P. Linton

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**LABORATORY CONTROL SUMMARY
ORGANOCHLORINE PESTICIDE ANALYSIS
EPA Method 608/8080**

Client: Geo-Con, Inc.

Project No.: 920385

Matrix: Soil

Laboratory Control ID: P0803-LCS2

Date of Preparation: 8/03/92

Spike Compound	Recovery	
	Blank Spike	QC Limits*
gamma-BHC (Lindane)	98%	46 - 127%
Heptachlor	90	35 - 130
Aldrin	84	34 - 132
Dieldrin	92	31 - 134
Endrin	105	42 - 139
4,4'-DDT	97	23 - 134

* = These limits are for advisory purposes only.

Reported by:

C. Rotman

Approved by:

H. H. H. H.

METALS ANALYSES

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

TOTAL METALS

Client: Geo-Con, Inc.

Client Sample ID: Top Soil

Date Sample Received: 8/01/92

Laboratory ID: 920385-01

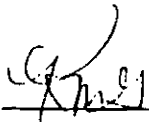
Date Analysis Completed: 8/13/92

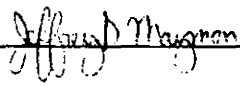
Concentration in: mg/kg (ppm)*

Target Analyte	Sample Concentration	Method Reporting Limit
Antimony	ND	20
Arsenic	13	1
Beryllium	ND	2
Cadmium	7	2
Chromium	16	2
Copper	18	2
Lead	24	1
Mercury	ND	0.4
Nickel	20	9
Selenium	ND	1
Silver	ND	2
Thallium	ND	1
Zinc	108	2

ND = Not detected

+ Dry weight basis, solid = 74%

Reported by: 

Approved by: 

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

TOTAL METALS

Client: Geo-Con, Inc.

Client Sample ID: #2 Stone

Date Sample Received: 8/01/92

Laboratory ID: 920385-03

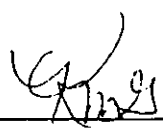
Date Analysis Completed: 8/13/92

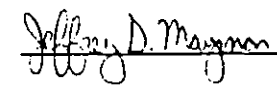
Concentration in: mg/kg (ppm)⁺

Target Analyte	Sample Concentration	Method Reporting Limit
Antimony	ND	20
Arsenic	3	1
Beryllium	ND	2
Cadmium	2	2
Chromium	2	2
Copper	19	2
Lead	6	1
Mercury	ND	0.3
Nickel	ND	8
Selenium	ND	1
Silver	ND	2
Thallium	ND	1
Zinc	40	2

ND = Not detected

+ Dry weight basis, solid = 97%

Reported by: 

Approved by: 

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

QUALITY CONTROL

METHOD BLANK

Client: Geo-Con, Inc.

Client Sample ID: Method Blank

Project No.: 920385

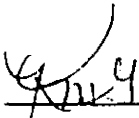
Laboratory ID: 0811PBS

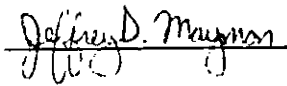
Date Analysis Completed: 8/13/92

Concentration in: mg/kg (ppm)

Target Analyte	Sample Concentration	Method Reporting Limit
Total Metals		
Antimony	ND	20
Arsenic	ND	1
Beryllium	ND	2
Cadmium	ND	2
Chromium	ND	2
Copper	ND	2
Lead	ND	1
Mercury	ND	0.4
Nickel	ND	8
Selenium	ND	1
Silver	ND	2
Thallium	ND	1
Zinc	ND	2

ND = Not detected

Reported by: 

Approved by: 

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

QUALITY CONTROL

LABORATORY CONTROL SAMPLE

Client: Geo-Con, Inc.

Client Sample ID: Laboratory Control Sample

Project No.: 920385

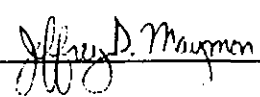
Laboratory ID: 0811LCSS

Date Analysis Completed: 8/13/92

Matrix: Soil

Target Analyte	% Recovery	Control Limits
Total Metals		
Antimony	111%	60-139%
Arsenic	102	69-131
Beryllium	90	75-125
Cadmium	101	79-121
Chromium	94	75-125
Copper	102	75-125
Lead	101	75-125
Mercury	128	67-134
Nickel	97	75-125
Selenium	97	49-152
Silver	94	70-131
Thallium	83	63-137
Zinc	110	74-126

Reported by: 

Approved by: 

INORGANIC ANALYTES

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

INORGANIC ANALYTES

Client: Geo-Con, Inc.

Client ID: TOP SOIL

Laboratory ID: 920385-01

Date Sample Received: 8/01/92

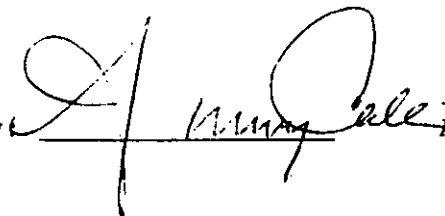
Date Sampled: 7/31/92

Target Analyte	Result	Units	Method Reporting Limit	Date Analyzed
pH	5.7	S.U	---	8/03/92
Total Cyanide	ND	mg/kg (ppm)	2	8/12/92
Total Phenols	ND	mg/kg (ppm)	4	8/13/92

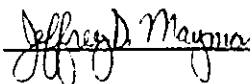
ND = Not detected

* Reported on a dry weight basis, solids = 74%

Reported by



Approved by:



**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

INORGANIC ANALYTES

Client: Geo-Con, Inc.

Client ID: #2 STONE

Laboratory ID: 920385-03

Date Sample Received: 8/01/92

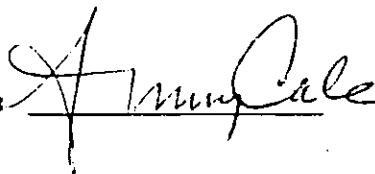
Date Sampled: 7/31/92

Target Analyte	Result	Units	Method Reporting Limit	Date Analyzed
pH	7.9	S.U	---	8/11/92
Total Cyanide	ND	mg/kg (ppm)	2	8/12/92
Total Phenols	ND	mg/kg (ppm)	3	8/13/92

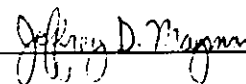
ND = Not detected

* Reported on a dry weight basis, solids = 97%

Reported by:



Approved by:



**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

QUALITY CONTROL

METHOD BLANK

Client: Geo-Con, Inc.

Client ID: Method Blank

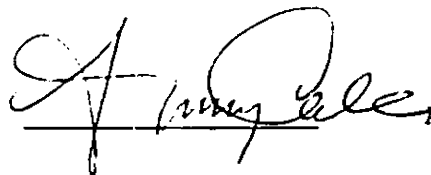
Project No.: 920385

Laboratory ID: PBS

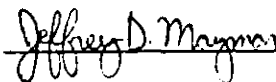
Target Analyte	Result	Units	Method Reporting Limit	Date Analyzed
Total Cyanide	ND	mg/kg (ppm)	1	8/12/92
Total Phenols	ND	mg/kg (ppm)	3	8/13/92

ND = Not detected

Reported by:



Approved by:



**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**QUALITY CONTROL
LABORATORY CONTROL SAMPLE**

Client: Geo-Con, Inc.

Client Sample ID: Laboratory Control Sample

Project No.: 920385

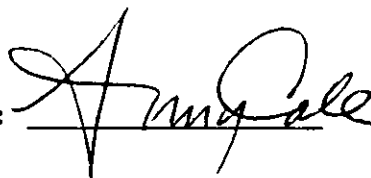
Laboratory ID: LCSS

Matrix: Solid

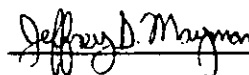
Target Analyte	% Recovery	Control Limits
Total Cyanide	96%	75-125%
Total Phenols	79%	75-125

ND = Not detected

Reported by:



Approved by:





GEOSYNTEC CONSULTANTS

ARCO

SUBMITTAL COVER SHEET

1992 year

PROJECT: CELA CAP PROJECT NO.: GQ3201 TASK NO.: 0203
LOCATION: WELLSVILLE, NEW YORK CONTRACTOR: GEO-CON, INC. (C91028-003-01)

SUBMITTAL NO.: 28QC04

REVISION NO.: ADD. No 25

SUBMITTAL TITLE: Gas Vent Stack Emission Source & Compliance Tests.

DATE RECEIVED: 23/NOV/92
(day/ month/ yr)

DATE REVIEWED: 23/NOV/92
(day/ month/ yr)

RESUBMITTAL REQUIRED:

☐ YES

☒ NO

DATE APPROVED: 11/DEC/92
(day/ month/ yr)

COMMENTS: Note blowing concentrations/comments...

• Reported Value for 2-Fluorophenol of 20% for method blank QC check is outside QC limits of 25-110%.

• Arsenic 10.7 ppm

• Chromium 7 ppm

• Lead 5.2 ppm

DISTRIBUTION:

BY:
GEOSYNTEC CONSULTANTS

BY:
ARCO

FL-0122

SUBMITTAL 28QC04
ADDENDUM NO. 25
CONTRACT NO. C91028-003-01
GAS VENT STONE BORROW SOURCE & COMPLIANCE TESTS
SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

Prepared for:

Atlantic Richfield Company
515 South Flower Street AP-4188
Los Angeles, CA 90017

Attn: Robert Ivy
Construction Supervisor

Prepared By:

GEO-CON, INC.
4075 Monroeville Boulevard
Corporate One Building II, Suite 400
Monroeville, Pennsylvania 15146
Telephone: (412) 856-7700

1. Geotechnical Compliance Tests

As per Addendum No. 2BQC04 Addendum No. 23, all geotechnical testing of the gas vent stone has been completed and accepted.

2. Chemical Sampling & Testing

As per Addendum No. 23, the test results of the second set of chemical analysis and testing performed on the gas vent stone. As per Addendum No. 23, page 14 of the Contractor Quality Control Management Plan, this completes the chemical sampling and testing of the gas vent stone.

Original chain of Custody goes to Laboratory

[illegible]

CEIMIC Corporation - 10 Dean Knauss Drive, Narragansett, RI 02882 (401) 782-8900 FAX (401) 782-8905

VOLATILE ORGANIC ANALYSES

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

SURROGATE RECOVERY SUMMARY

Volatile Organics Analysis

Client: Geo-Con, Inc.

Date Samples Received: 10/21/92

Project No.: 920581

Matrix: Stone

Surrogate Compound	Method Blank	Samples	
		-01	QC Limits
1,2-Dichloroethane-d4	97%	97%	70-121%
Toluene-d8	101	102	84-138
Bromofluorobenzene	99	107	59-113

Reported by: 117

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

VOLATILE ORGANICS

PRIORITY POLLUTANT LIST

EPA Method 624/8240

Client: Geo-Con, Inc.

Client Sample ID: Method Blank

Laboratory ID: V71025-B1

Date Sample Received: NA

Date Sample Prepared: 10/25/92

Date Sample Analyzed: 10/25/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Acrolein	ND	100
Acrylonitrile	ND	100
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	10
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroethane	ND	10
Chlorodibromomethane	ND	5
2-Chloroethylvinyl ether	ND	5
Chloroform	ND	5
Chloromethane	ND	10
1,2-Dichlorobenzene	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethane	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethene	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethyl benzene	ND	5

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**VOLATILE ORGANICS
PRIORITY POLLUTANT LIST
EPA Method 624/8240**

Client: Geo-Con, Inc.

Client Sample ID: Method Blank

Laboratory ID: V71025-B1

Target Analyte	Sample Concentration	Method Reporting Limits
Methylene Chloride	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	10
Vinyl Chloride	ND	10

NA = Not applicable
ND = Not Detected

Reported By: W

Approved by: AK

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

VOLATILE ORGANICS

PRIORITY POLLUTANT LIST

EPA Method 624/8240

Client: Geo-Con, Inc.

Client Sample ID: Gas Vent Stone

Laboratory ID: 920581-01

Date Sample Received: 10/21/92

Date Sample Prepared: 10/25/92

Date Sample Analyzed: 10/25/92

Concentration in: ug/kg (ppb)*

Target Analyte	Sample Concentration	Method Reporting Limits
Acrolein	ND	100
Acrylonitrile	ND	100
Benzene	ND	5
Bromodichloromethane	ND	5
Bromoform	ND	5
Bromomethane	ND	10
Carbon tetrachloride	ND	5
Chlorobenzene	ND	5
Chloroethane	ND	10
Chlorodibromomethane	ND	5
2-Chloroethylvinyl ether	ND	5
Chloroform	ND	5
Chloromethane	ND	10
1,2-Dichlorobenzene	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethane	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethene	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethyl benzene	ND	5

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**VOLATILE ORGANICS
PRIORITY POLLUTANT LIST
EPA Method 624/8240**

Client: Geo-Con, Inc.

Client Sample ID: Gas Vent Stone

Laboratory ID: 920581-01

Target Analyte	Sample Concentration	Method Reporting Limits
Methylene Chloride	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	10
Vinyl Chloride	ND	10

ND = Not Detected

+ Dry weight basis, solid = 99%

Reported By: _____

Approved by: _____

SEMIVOLATILE ORGANIC ANALYSES

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

SURROGATE RECOVERY SUMMARY

Semivolatile Organics

Client: Geo-Con, Inc.

Project No.: 920581

Date Samples Received: 10/21/92

Matrix: Stone

Surrogate Compound	Samples		QC Limits
	Method Blank	-01	
2-Fluorophenol	36%	20%**	25-110%
2-Chlorophenol-d4*	68	43	20-110
Phenol-d5	52	32	24-110
2,4,6-Tribromophenol	64	45	19-123
1,2-Dichlorobenzene-d4*	60	41	20-110
Nitrobenzene-d5	64	41	23-114
2-Fluorobiphenyl	70	50	30-116
Terphenyl-d14	64	28	18-141

* Advisory

** Recovery out side of QC limits

Reported by: _____



**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Method Blank

Laboratory ID: S1029-B1

Date Sample Received: NA

Date Sample Prepared: 10/29/92

Date Sample Analyzed: 11/05/92

Concentration in: ug/L (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Phenol	ND	330
Bis(2-chloroethyl)ether	ND	330
2-Chlorophenol	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl)ether	ND	330
n-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
2-Nitrophenol	ND	330
2,4-Dimethylphenol	ND	330
Bis(2-chloroethoxy)methane	ND	330
2,4-Dichlorophenol	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
Hexachlorobutadiene	ND	330
4-Chloro-3-methylphenol	ND	330
Hexachlorocyclopentadiene	ND	330
2,4,6-Trichlorophenol	ND	830
2-Chloronaphthalene	ND	830

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Method Blank

Laboratory ID: S1029-B1

Target Analyte	Sample Concentration	Method Reporting Limits
Dimethylphthalate	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
2,4-Dinitrophenol	ND	830
4-Nitrophenol	ND	830
2,4-Dinitrotoluene	ND	330
2,6-Dinitrotoluene	ND	330
Diethyl phthalate	ND	330
4-Chlorophenyl phenyl ether	ND	330
Fluorene	ND	330
4,6-Dinitro-2-methylphenol	ND	830
n-Nitrosodiphenylamine	ND	330
4-Bromophenyl phenyl ether	ND	330
Hexachlorobenzene	ND	330
Pentachlorophenol	ND	830
Phenanthrene	ND	330
Anthracene	ND	330
Di-n-butylphthalate	ND	330
Fluoranthene	ND	330
Benzidine	ND	3,300
Pyrene	ND	330
Butylbenzylphthalate	ND	330
3,3'-Dichlorobenzidine	ND	330
Benzo(a)anthracene	ND	330
Bis(2-ethylhexyl)phthalate	ND	330
Chrysene	ND	330
Di-n-octylphthalate	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Method Blank

Laboratory ID: S1029-B1

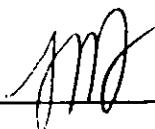
Target Analyte	Sample Concentration	Method Reporting Limits
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330
1,2-Diphenylhydrazine	ND	330
N-Nitrosodimethylamine	ND	330

NA = Not applicable

ND = Not detected

No Dioxin screen detected.

Reported by: _____



Approved by: _____



**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Gas Vent Stone

Laboratory ID: 920581-01

Date Sample Received: 10/21/92

Date Sample Prepared: 10/29/92

Date Sample Analyzed: 11/05/92

Concentration in: ug/L (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
Phenol	ND	330
Bis(2-chloroethyl)ether	ND	330
2-Chlorophenol	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl)ether	ND	330
n-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
2-Nitrophenol	ND	330
2,4-Dimethylphenol	ND	330
Bis(2-chloroethoxy)methane	ND	330
2,4-Dichlorophenol	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
Hexachlorobutadiene	ND	330
4-Chloro-3-methylphenol	ND	330
Hexachlorocyclopentadiene	ND	330
2,4,6-Trichlorophenol	ND	820
2-Chloronaphthalene	ND	820

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Gas Vent Stone

Laboratory ID: 920581-01

Target Analyte	Sample Concentration	Method Reporting Limits
Dimethylphthalate	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
2,4-Dinitrophenol	ND	820
4-Nitrophenol	ND	820
2,4-Dinitrotoluene	ND	330
2,6-Dinitrotoluene	ND	330
Diethyl phthalate	ND	330
4-Chlorophenyl phenyl ether	ND	330
Fluorene	ND	330
4,5-Dinitro-2-methylphenol	ND	820
n-Nitrosodiphenylamine	ND	330
4-Bromophenyl phenyl ether	ND	330
Hexachlorobenzene	ND	330
Pentachlorophenol	ND	820
Phenanthrene	ND	330
Anthracene	ND	330
Di-n-butylphthalate	ND	330
Fluoranthene	ND	330
Benzidine	ND	3,300
Pyrene	ND	330
Butylbenzylphthalate	ND	330
3,3'-Dichlorobenzidine	ND	330
Benzo(a)anthracene	ND	330
Bis(2-ethylhexyl)phthalate	ND	330
Chrysene	ND	330
Di-n-octylphthalate	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANT LIST

EXTRACTABLE ORGANICS

EPA Method 625/8270

Client: Geo-Con, Inc.

Client Sample ID: Gas Vent Stone

Laboratory ID: 920581-01

Target Analyte	Sample Concentration	Method Reporting Limits
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330
1,2-Diphenylhydrazine	ND	330
N-Nitrosodimethylamine	ND	330

ND = Not detected

No Dioxin screen detected.

Reported by: _____

Approved by: _____

PESTICIDES ANALYSES

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides Analysis

Client: Geo-Con, Inc.

Date Samples Received: 10/21/92

Project No.: 920581

Client ID	Laboratory ID	TCX Recovery	DCB Recovery
Gas Vent Stone	920581-01	70%	65%
<u>QA/QC</u>			
Method Blank	P1024-B1	63	50

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

Reported by: XD

**CEIMIC
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"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANTS

ORGANOCHLORINE PESTICIDES

EPA Method 608/8080

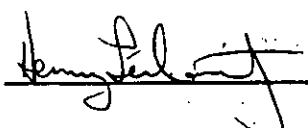
Client: Geo-Con, Inc.
Client Sample ID: Method Blank
Date Sample Received: NA
Date Sample Analyzed: 11/05/92

Laboratory ID: P1024-B1
Date Sample Prepared: 10/24/92
Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
delta-BHC	ND	1.7
gamma-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
4,4'-DDD	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDT	ND	3.3
Methoxychlor	ND	17.0
Endrin aldehyde	ND	3.3
Chlordane	ND	3.3
Toxaphene	ND	170.0
PCB-1016	ND	33.0
PCB-1221	ND	67.0
PCB-1232	ND	33.0
PCB-1242	ND	33.0
PCB-1248	ND	33.0
PCB-1254	ND	33.0
PCB-1260	ND	33.0

NA = Not applicable
ND = Not detected

Reported by: XD

Approved by: 

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

PRIORITY POLLUTANTS

ORGANOCHLORINE PESTICIDES

EPA Method 608/8080

Client: Geo-Con, Inc.

Client Sample ID: Gas Vent Stone

Date Sample Received: 10/21/92

Date Sample Analyzed: 11/05/92

Laboratory ID: 920581-01

Date Sample Prepared: 10/24/92

Concentration in: ug/kg (ppb)

Target Analyte	Sample Concentration	Method Reporting Limits
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
delta-BHC	ND	1.7
gamma-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
4,4'-DDD	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDT	ND	3.3
Methoxychlor	ND	17.0
Endrin aldehyde	ND	3.3
Chlordane	ND	3.3
Toxaphene	ND	170.0
PCB-1016	ND	33.0
PCB-1221	ND	67.0
PCB-1232	ND	33.0
PCB-1242	ND	33.0
PCB-1248	ND	33.0
PCB-1254	ND	33.0
PCB-1260	ND	33.0

ND = Not detected

Reported by: XD

Approved by: Henry L. [Signature]

METALS ANALYSES

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

TOTAL METALS

Client: Geo-Con, Inc.

Client Sample ID: Gas Vent Stone

Date Sample Received: 10/21/92

Laboratory ID: 920581-01

Date Analysis Completed: 11/09/92

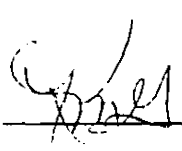
Concentration in: mg/kg (ppm)*

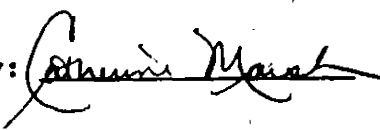
Target Analyte	Sample Concentration	Method Reporting Limit
Antimony	ND	20
Arsenic	10.7	0.9
Beryllium	ND	2
Cadmium	ND	2
Chromium	7	2
Copper	17	2
Lead	5.2	0.9
Mercury	ND	0.3
Nickel	16	7
Selenium	ND	0.9
Silver	ND	2
Thallium	ND	4*
Zinc	133	2

ND = Not detected

+ Dry weight basis, solid = 100%

* Method Reporting Limit was adjusted to account for sample matrix effects.

Reported by: 

Approved by: 

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

QUALITY CONTROL

METHOD BLANK

Client: Geo-Con, Inc.

Client Sample ID: Method Blank

Project No.: 920581

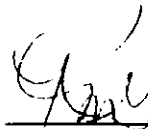
Laboratory ID: 1030PBS

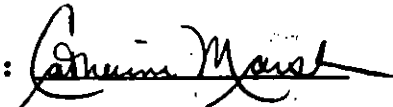
Date Analysis Completed: 11/09/92

Concentration in: mg/kg (ppm)

Target Analyte	Sample Concentration	Method Reporting Limit
Total Metals		
Antimony	ND	10
Arsenic	ND	1
Beryllium	ND	2
Cadmium	ND	2
Chromium	ND	2
Copper	ND	2
Lead	ND	1
Mercury	ND	0.4
Nickel	ND	8
Selenium	ND	1
Silver	ND	2
Thallium	ND	1
Zinc	ND	2

ND = Not detected

Reported by: 

Approved by: 

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**QUALITY CONTROL
LABORATORY CONTROL SAMPLE**

Client: Geo-Con, Inc.

Client Sample ID: Laboratory Control Sample

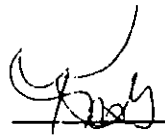
Project No.: 920581

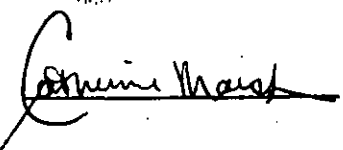
Laboratory ID: 1030LCSS

Date Analysis Completed: 11/09/92

Matrix: Soil

Target Analyte	% Recovery	Control Limits
Total Metals		
Antimony	116%	60-139%
Arsenic	69	69-131
Beryllium	75	75-125
Cadmium	77	75-125
Chromium	89	75-125
Copper	107	75-125
Lead	103	75-125
Mercury	95	67-134
Nickel	88	75-125
Selenium	89	49-152
Silver	89	70-131
Thallium	66	63-137
Zinc	94	74-126

Reported by: 

Approved by: 

INORGANIC ANALYTES

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

INORGANIC ANALYTES

Client: Geo-Con, Inc.

Client ID: Gas Vent Stone

Laboratory ID: 920581-01

Date Sample Received: 10/21/92

Date Sampled: 10/20/92

Target Analyte	Result	Units	Method Reporting Limit	Date Analyzed
pH	7.8	S.U	---	10/27/92
Total Cyanide	ND	mg/kg (ppm)+	2	10/27/92
Total Phenols	ND	mg/kg (ppm)+	5	10/27/92

ND = Not detected

+ Reported on a "dry weight basis", % solid = 99.8%

Reported by:

Jeffrey D. Morgan

Approved by:

Cherie M. Mough

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

QUALITY CONTROL

METHOD BLANK

Client: Geo-Con, Inc.

Client ID: Method Blank

Project No.: 920581

Laboratory ID: PBS

Target Analyte	Result	Units	Method Reporting Limit	Date Analyzed
Total Cyanide	ND	mg/kg	2	10/27/92
Total Phenols	ND	mg/kg	5	10/27/92

ND = Not detected

Reported by:

Jeffrey D. Maymon

Approved by:

Christine Marsh

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**QUALITY CONTROL
LABORATORY CONTROL SAMPLE**

Client: Geo-Con, Inc.

Client Sample ID: Laboratory Control Sample

Project No.: 920581

Laboratory ID: LCSW

Matrix: Aqueous

Target Analyte	% Recovery	Control Limits
Total Phenols	86%	75-125%

Reported by:

Jeffrey D. Mayron

Approved by:

Stephen Marsh

**CEIMIC
CORPORATION**

"Analytical Chemistry for Environmental Management"

**QUALITY CONTROL
LABORATORY CONTROL SAMPLE**

Client: Geo-Con, Inc.

Client Sample ID: Laboratory Control Sample

Project No.: 920581

Laboratory ID: LCSS

Matrix: Solid

Target Analyte	% Recovery	Control Limits
Total Cyanide	103%	75-125%

Reported by:

Jeffrey D. Maymon

Approved by:

Arthur M. Marsh

