

CLIENT: POLYGAL USA, INC.
P.O. Box 410592
Charlotte, NC 28241-0592
Ron Melvin

Test Report No: 172155-1

Date: December 11, 2003

SAMPLE ID: The Client submitted and identified the following test materials as Polygal Line of Structural Polycarbonate Sheets as sampled under the witness of SGS U.S. Testing Co. Inc. at the Client's distribution facility . See page 2 for a detailed list of the materials Line and product sampling details.

DATE OF RECEIPT: Entered into SGS USTC sample tracking system on June 23, 2003 as STN 36620.

TESTING PERIOD: October through December, 2003.

AUTHORIZATION: Testing authorized by Ron Melvin.

TEST REQUESTED: Uniform Building Code Standard 26-5 "Chamber Method of Test for Measuring the Density of Smoke from the Burning or Decomposition of Plastic Material" Determine This method is based on ASTM Designation D2843-70.

Uniform Building Code Standard 26-6 "Ignition Properties of Plastics".
This method is based on ASTM Designation ASTM D 1929-68(1975).
Self ignition temperature only.

Uniform Building Code Standard 26-7 "Method of Test for Determining Classification of Approved Light-Transmitting Plastics". This method is based on ASTM Designation D635-74.

OBJECTIVE: Evaluate the Polygal Line of Structural Polycarbonate Sheets for compliance with Section 2603, Light-Transmitting Plastics, of the Uniform Building Code, 2603.2 Approved Plastic Materials and the International Building Code, Section 2606 Light-Transmitting Plastics, 2606.4 Specifications..

Tested by

Brian Ortega
Test Technician

**Signed for and on behalf of
SGS U.S. Testing Company Inc.**

Greg Banasky
Supervisor Fire Technology

DETAILED SAMPLE IDENTIFICATION: Per a specification sheet provided by the Client, the Line consists of five thicknesses and six colors for a total of 33 variations. See list of products below.
 Note: The 32 mm sheet was not included in this evaluation.

COLORS	CLEAR	ICE	BRONZE	GREEN	BLUE	METALIC SILVER
PRODUCT						
6mm STANDARD	X	X	X			
8mm STANDARD	X	X*	X			
6mm TRIPLE CLEAR	X					
10mm STANDARD	X	X	X	X	X	
16mm STANDARD	X	X	X			
16mm TITAN	X	X	X			
16mm RFX	X	X	X		X	
16mm TRIPLE CLIP	X	X	X			
25mm THERMOGAL	X	X	X			
8mm POLYSHADE						X
16mm POLYSHADE						X
8mm PRIMALITE		X				
16mm PRIMALITE		X				
25mm PRIMALITE		X				

* Also known as Polycoolite

PRODUT SAMPLING: The products were randomly sampled from stock at the Polygal facility located in Charlotte, North Carolina by a SGS US Testing Co., Inc. inspector on May 22, 2003. The products were marked and sealed by the inspector and shipped to SGS US Testing C., Inc. Two four foot by eight foot sheets of the products listed above were sampled.

SELECTION OF REPRESENTATIVE SAMPLES FOR TESTING: The following products were chosen to represent the Polygal Line for this evaluation: 6mm Standard Clear, Ice and Bronze, 16mm Standard Clear, Ice and Bronze, 16mm Triple Clip Clear, Ice and Bronze, 16mm Titan, Clear Ice and Bronze and 25mm Primalite Ice. In order to evaluate the various colors of the same style/thickness one or several specimens of each color was used in the individual test methods. Example: For the UBC 26-7 on the 6mm Standard, three specimens of the clear, three of the ice and four of the bronze were used for the ten specimens.

SUMMARY OF TEST RESULTS:

TEST METHOD			UBC 26-5	UBC 26-6	UBC 26-7
SAMPLE					
6mm Standard			56.5%	520° C (936° F)	2.3 in./min. Classification: CC2
16mm Standard			73.9%	510° C (918° F)	1.1 in./min. Classification: CC2
16mm Triple Clip			60.8%	510° C (918° F)	1.2 in./min. Classification: CC2
16mm Titan			56.5	520° C (936° F)	1.1 in./min Classification: CC2.
25mm Primalite Ice			67.0%	510° C (918° F)	1.9 in./min. Classification: CC2

See individual test results on pages 4 thru 13 of this report.

APPROVED PLASTIC MATERIALS REQUIREMENTS UNIFORM BUILDING CODE, 2603.2

Plastic Materials, Approved, other than foam plastics regulated under Sections 601.5.5 and 2602, are those plastic materials having a self-ignition temperature of 650° F (343° F) or greater as determined in accordance with UBC Standard 26-6, and a smoke-density rating not greater than 450 when tested in accordance with UBC Standard 8-1, in the way intended for use, or a smoke-density rating not greater than 75 when tested in accordance with UBC Standard 26-5 in the thickness intended for use. Approved plastic shall be classified as either CC1 or CC2 in accordance with UBC Standard 26-7.

CC1: Plastic materials which have a burning extent of 1 inch (25mm) or less when tested in nominal 0.060-inch (1.5mm) thickness (or in the thickness intended for use) by this test.

CC2: Plastic materials which have a burning rate of 2.5 inches per minute (64mm/min) or less when tested in nominal 0.060-inch (1.5mm) thickness (or in the thickness intended for use) by this test.

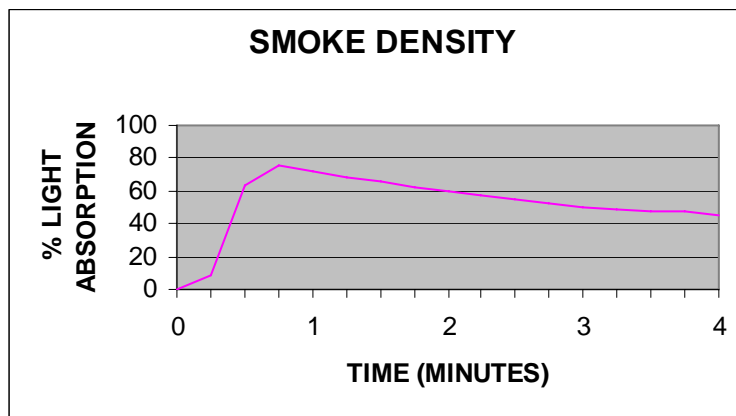
CONCLUSION: The representative samples from the Polygal Line of Structural Polycarbonate Sheets meet the above requirements.

UBC 26-5 "Chamber Method of Test for Measuring the Density of Smoke from the Burning or Decomposition of Plastic Material"

TEST RESULTS: Sample: 6 mm Standard

Smoke Density Rating 56.5%
 Maximum Smoke Density 75
 (highest point on curve)
 Visibility of Exit Sign Good
 Number of Specimens Tested 3
 Specimen Thickness 6mm nominal

Conditions	Terms	Spec. No. 1	Spec. No. 2	Spec. No. 3	Average
Light Absorption After					
Minutes	Seconds				
0	0	0	0	0	0
	15 %	8	10	6	8
	30 %	74	68	48	63
	45 %	84	76	66	75
1	60 %	80	70	66	72
	75 %	76	66	64	69
	90 %	73	62	62	66
	105 %	70	58	58	62
2	120 %	68	55	55	59
	135 %	65	53	53	57
	150 %	63	50	51	55
	165 %	60	49	48	52
3	180 %	58	47	46	50
	195 %	56	46	46	49
	210 %	55	45	44	48
	225 %	54	44	44	47
4	240 %	52	42	43	46



CLIENT: POLYGAL USA, INC.

Report No.: 172155-1
 Date: December 11, 2003
 Page: 5 of 13

TEST RESULTS: Sample: 6 mm Standard

<u>Self Ignition Temperature</u>	<u>Number of Specimens Tested</u>
520°C (936°F)	4

UBC 26-6"Method of Test for Determining Classification of Approved Light-Transmitting Plastics"

TEST RESULTS: Sample: 6 mm Standard

TEST RESULTS:	Average Burning Rate:	2.3 in./min.
	Average Time of Burning:	45 seconds
	Range of Time of Burning:	37 - 67 seconds
	Average Extent of Burning:	42 mm
	Range of Extent of Burning:	35 – 55 mm
	Number of Specimens Tested:	10
	Average Specimen Thickness:	6mm nominal

CLIENT: POLYGAL USA, INC.

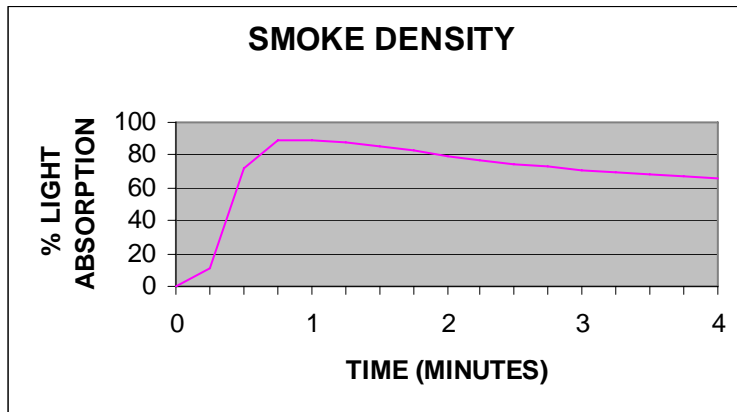
**Report No.: 172155-1
Date: December 11, 2003
Page: 6 of 13**

**UBC 26-5"Chamber Method of Test for Measuring the Density of Smoke from the Burning or
Decomposition of Plastic Material"**

TEST RESULTS: Sample: 16 mm Standard

Smoke Density Rating 73.9%
 Maximum Smoke Density 89
 (highest point on curve)
 Visibility of Exit Sign Good
 Number of Specimens Tested 3
 Specimen Thickness 16mm nominal

Conditions	Terms	Spec. No. 1	Spec. No. 2	Spec. No. 3	Average
Light Absorption After					
Minutes	Seconds				
0	0	0	0	0	0
	15 %	16	6	10	11
	30 %	70	68	79	72
	45 %	88	88	90	89
1	60 %	92	90	86	89
	75 %	90	88	84	87
	90 %	90	85	82	86
2	105 %	86	82	79	82
	120 %	84	79	76	80
	135 %	82	75	74	77
	150 %	80	73	72	75
	165 %	78	71	70	73
3	180 %	76	69	68	71
	195 %	75	66	67	69
	210 %	73	65	66	68
	225 %	72	64	64	67
4	240 %	71	63	62	65



Report No.: 172155-1
 Date: December 11, 2003
 Page: 7 of 13

CLIENT: POLYGAL USA, INC.

UBC 26-7 "Ignition Properties of Plastics"

TEST RESULTS: Sample: 16 mm Standard

Self

Number of

Ignition Temperature

510°C (918°F)

Specimens Tested

4

UBC 26-6"Method of Test for Determining Classification of Approved Light-Transmitting Plastics"

TEST RESULTS: Sample: 16 mm Standard

TEST RESULTS:	Average Burning Rate:	1.1 in./min.
	Average Time of Burning:	103 seconds
	Range of Time of Burning:	65 - 142 seconds
	Average Extent of Burning:	49mm
	Range of Extent of Burning:	35 – 62 mm
	Number of Specimens Tested:	10
	Average Specimen Thickness:	16mm nominal

CLIENT: POLYGAL USA, INC.

**Report No.: 172155-1
Date: December 11, 2003
Page: 8 of 13**

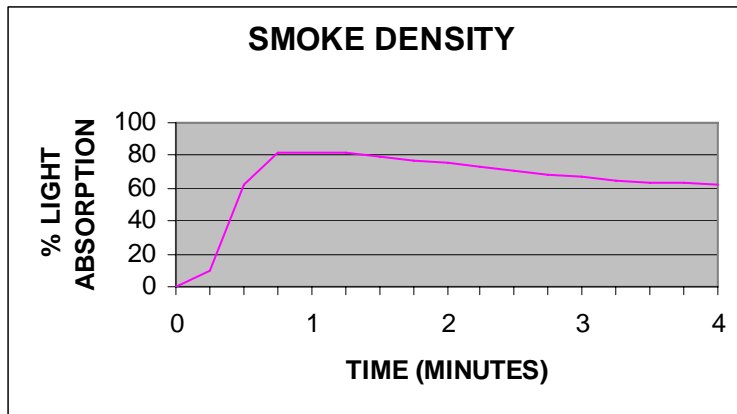
UBC 26-5"Chamber Method of Test for Measuring the Density of Smoke from the Burning or Decomposition of Plastic Material"

TEST RESULTS: Sample: 16 mm Triple Clip

Smoke Density Rating	60.8%
Maximum Smoke Density (highest point on curve)	82

Visibility of Exit Sign Good
 Number of Specimens Tested 3
 Specimen Thickness 16mm nominal

Conditions	Terms	Spec. No. 1	Spec. No. 2	Spec No. 3	Average
Light Absorption After					
Minutes	Seconds				
0	0	0	0	0	0
	15 %	6	8	14	9
	30 %	46	76	64	62
	45 %	74	92	79	82
1	60 %	82	92	72	82
	75 %	82	91	73	82
	90 %	79	89	71	80
	105 %	77	87	68	77
2	120 %	75	86	65	75
	135 %	73	84	62	73
	150 %	70	82	60	71
	165 %	68	79	58	68
3	180 %	66	77	57	67
	195 %	64	75	56	65
	210 %	63	74	55	64
	225 %	62	73	54	63
4	240 %	61	72	52	62



CLIENT: POLYGAL USA, INC.

Report No.: 172155-1
 Date: December 11, 2003
 Page: 9 of 13

UBC 26-7 "Ignition Properties of Plastics"

TEST RESULTS: Sample: 16 mm Triple Clip

Self Ignition Temperature

510°C (918°F)

Number of Specimens Tested

4

UBC 26-6"Method of Test for Determining Classification of Approved Light-Transmitting Plastics"

TEST RESULTS: Sample: 16 mm Triple Clip

TEST RESULTS:	Average Burning Rate:	1.2 in./min.
	Average Time of Burning:	110 seconds
	Range of Time of Burning:	73 - 190 seconds
	Average Extent of Burning:	54 mm
	Range of Extent of Burning:	35 – 80 mm
	Number of Specimens Tested:	10
	Average Specimen Thickness:	16mm nominal

CLIENT: POLYGAL USA, INC.

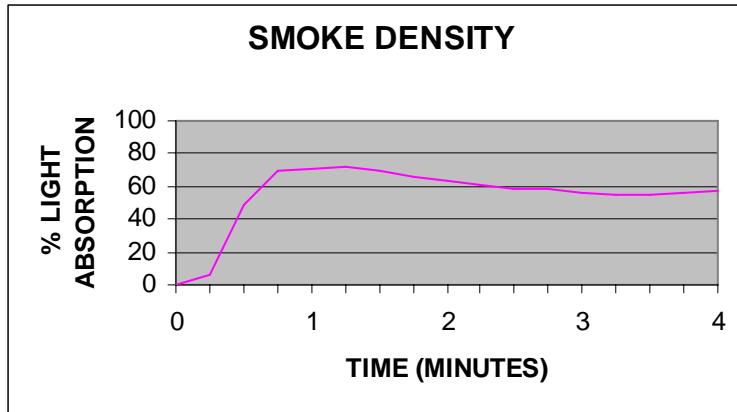
**Report No.: 172155-1
Date: December 11, 2003
Page: 10 of 13**

UBC 26-5"Chamber Method of Test for Measuring the Density of Smoke from the Burning or Decomposition of Plastic Material"

TEST RESULTS: Sample: 16 mm Titan

Smoke Density Rating	56.5%
Maximum Smoke Density (highest point on curve)	72
Visibility of Exit Sign	Good
Number of Specimens Tested	3
Specimen Thickness	16mm nominal

Conditions	Terms	Spec. No. 1	Spec. No. 2	Spec. No. 3	Average
Light Absorption After					
Minutes	Seconds				
0	0	0	0	0	0
	15 %	2	10	8	7
	30 %	28	68	50	49
	45 %	54	80	74	69
1	60 %	58	79	74	70
	75 %	60	79	76	72
	90 %	58	78	72	69
	105 %	52	77	68	66
2	120 %	51	74	65	63
	135 %	48	73	62	61
	150 %	47	70	60	59
	165 %	44	72	58	58
3	180 %	43	71	56	57
	195 %	40	69	54	54
	210 %	46	66	51	54
	225 %	54	64	50	56
4	240 %	58	63	50	57



CLIENT: POLYGAL USA, INC.

Report No.: 172155-1
Date: December 11, 2003
Page: 11 of 13

UBC 26-7 "Ignition Properties of Plastics"

TEST RESULTS: Sample: 16 mm Titan

Self Ignition Temperature

520°C (936°F)

Number of Specimens Tested

6

UBC 26-6 "Method of Test for Determining Classification of Approved Light-Transmitting Plastics"

TEST RESULTS: Sample:16 mm Titan

TEST RESULTS: Average Burning Rate: 1.1 in./min.
 Average Time of Burning: 166 seconds
 Range of Time of Burning: 93 - 220 seconds
 Average Extent of Burning: 75 mm
 Range of Extent of Burning: 55 – 100 mm
 Number of Specimens Tested: 10
 Average Specimen Thickness: 16mm nominal

CLIENT: POLYGAL USA, INC.

**Report No.: 172155-1
Date: December 11, 2003
Page: 12 of 13**

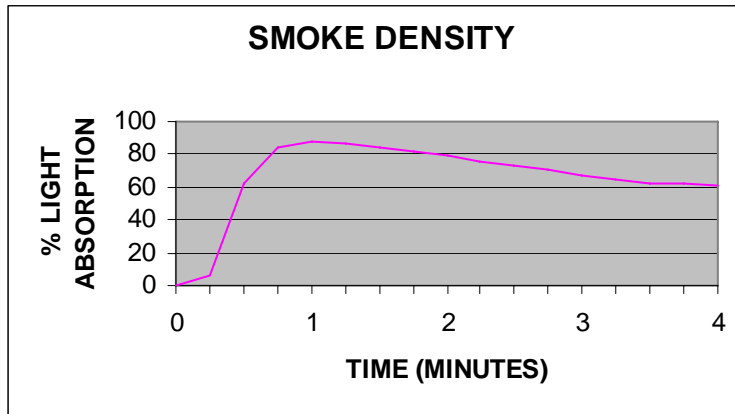
UBC 26-5“Chamber Method of Test for Measuring the Density of Smoke from the Burning or Decomposition of Plastic Material”

TEST RESULTS: Sample: 25 mm Primalite

Smoke Density Rating 67.0%
Maximum Smoke Density 88
(highest point on curve)
Visibility of Exit Sign Good
Number of Specimens Tested 3
Specimen Thickness 25mm nominal

Conditions	Terms	Spec. No. 1	Spec. No. 2	Spec. No. 3	Average
Light Absorption After					
Minutes	Seconds				

0	0	0	0	0	0
	15 %	4	10	6	7
	30 %	60	66	60	62
	45 %	76	88	89	84
1	60 %	82	94	88	88
	75 %	80	94	86	87
	90 %	78	92	82	84
	105 %	75	90	79	81
2	120 %	72	88	78	79
	135 %	70	84	74	76
	150 %	66	82	72	73
	165 %	62	80	70	71
3	180 %	58	76	68	67
	195 %	54	74	66	65
	210 %	52	72	64	63
	225 %	52	72	62	62
4	240 %	50	70	62	61



Report No.: 172155-1
Date: December 11, 2003
Page: 13 of 13

CLIENT: POLYGAL USA, INC.

UBC 26-7 "Ignition Properties of Plastics"

TEST RESULTS: Sample: 25 mm Primalite

Self Ignition Temperature

510°C (918°F)

Number of Specimens Tested

3

UBC 26-6 "Method of Test for Determining Classification of Approved Light-Transmitting Plastics"

TEST RESULTS: Sample: 25 mm Primalite

TEST RESULTS: Average Burning Rate: 1.9 in./min.

Average Time of Burning:	45 seconds
Range of Time of Burning:	120 - 125 seconds
Average Extent of Burning:	100 mm
Range of Extent of Burning:	100 mm
Number of Specimens Tested:	3
Average Specimen Thickness:	25mm nominal

End of Report