

**ASTM D1929 TESTING
FOR
BENCORE
ON
LIGHTBEN 21MM
VTEC #100-5906-6
TESTED: NOVEMBER 12, 2018**



VTEC Laboratories Inc.

November 13, 2018

Client: Bencore
Via Provinciale Nazzano
20-54033 Carrara
ITALY

Attention: Tito Franzini

Subject:

Standard Test Method for Determining Ignition Temperature of Plastics according to ASTM D1929.

Disclaimer:

This is a factual report of the results obtained from the laboratory test of sample products. The results may be applied only to the products tested and should not be construed as applicable to other similar products of the manufacturer. The report is not a recommendation or a disapprobation by VTEC Laboratories, Inc. of the material tested. While this report may be used for obtaining product acceptance, it may not be used in advertising.

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Material Tested:

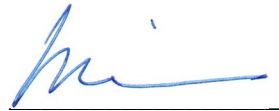
- | | |
|--------------------------|---------------|
| 1) Product Description: | Lightben 21mm |
| 2) Supplier: | Bencore |
| 3) Color: | Clear |
| 4) Specimen Composition: | Heterogeneous |
| 5) Average Thickness: | 0.83 in. |

Results:

Flash-Ignition Temperature: **380°C (716°F)**

Self-Ignition Temperature: **460°C (860°F)**

This product meets the requirements of the IBC Chapter 26 Section 2606.4 since the self-ignition temperature is greater than 650°F.



Neil Schultz
Executive Director



Amirudin Rahim
Technical Director

**ASTM D2843 TESTING
FOR
BENCORE
ON
LIGHTBEN 21MM
VTEC #100-5906-4
TESTED: NOVEMBER 12, 2018**



VTEC Laboratories Inc.

November 13, 2018

Client: Bencore
Via Provinciale Nazzano
20-54033 Carrara
ITALY

Attention: Tito Franzini

I. Scope:

This report contains the reference to the test method, preparation and conditioning of sample, observation of material, test and post test observation data test results.

II. Test Method:

This test was conducted in accordance with ASTM D2843 specifications.

This standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or under actual fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.

III. Test Results:

The test results for VTEC# 100-5906-4 are contained on the following pages.

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DATE: 11/12/18
 PROJECT #: 100-5906-4
 SUPPLIED BY: Bencore
 CONDITIONING TEMP: 23 deg. C
 SPECIAL INSTRUCTIONS: None

DESCRIPTION OF MATERIAL: Lightben 21mm

TEST DATA: LIGHT ABSORPTION

Exp. Time: 4.0 min.

TEST: Time (min.)	LIGHT TRANSMITTANCE (mV)			LIGHT ABSORPTION (%)			
	Test #1	Test #2	Test#3	Test #1	Test #2	Test#3	Average
0.00	30.33	30.22	30.52	0.00%	0.00%	0.00%	0.00%
0.25	30.26	30.88	30.27	0.23%	0.00%	0.82%	0.35%
0.50	30.45	30.36	31.29	0.00%	0.00%	0.00%	0.00%
0.75	25.60	30.11	31.74	15.60%	0.36%	0.00%	5.32%
1.00	19.05	24.39	21.32	37.19%	19.29%	30.14%	28.88%
1.25	9.75	19.73	18.01	67.85%	34.71%	40.99%	47.85%
1.50	13.00	16.60	14.41	57.14%	45.07%	52.79%	51.66%
1.75	18.28	13.47	11.71	39.73%	55.43%	61.63%	52.26%
2.00	20.18	19.44	14.48	33.47%	35.67%	52.56%	40.56%
2.25	21.43	22.95	17.06	29.34%	24.06%	44.10%	32.50%
2.50	21.85	24.03	21.17	27.96%	20.48%	30.64%	26.36%
2.75	22.40	24.04	22.91	26.15%	20.44%	24.93%	23.84%
3.00	22.84	24.27	23.86	24.70%	19.69%	21.82%	22.07%
3.25	22.57	23.81	24.19	25.59%	21.21%	20.74%	22.51%
3.50	22.99	24.05	24.01	24.20%	20.42%	21.33%	21.98%
3.75	23.20	24.05	24.02	23.51%	20.42%	21.30%	21.74%
4.00	22.97	24.27	24.12	24.27%	19.69%	20.97%	21.64%

	Test #1	Test #2	Test#3	Average
Thickness (mm):	21.0	21.0	21.0	21.0
Sample Size (mm):	25 x 25	25 x 25	25 x 25	25 x 25
Weight (g):	4.9	4.9	4.9	4.9
Max Smoke Density %:	67.85%	55.43%	61.63%	61.64%
Smoke Density Rating %:	27.80%	21.69%	27.14%	25.54%
Color of smoke:	Gray	Gray	Gray	Gray

OBSERVATIONS:

The sample ignited Immediately and extinguishedat approximately 1m45s.

The exit sign was clearly visible throughout the test with slight obscuration by drifting smoke while the sample was flaming.

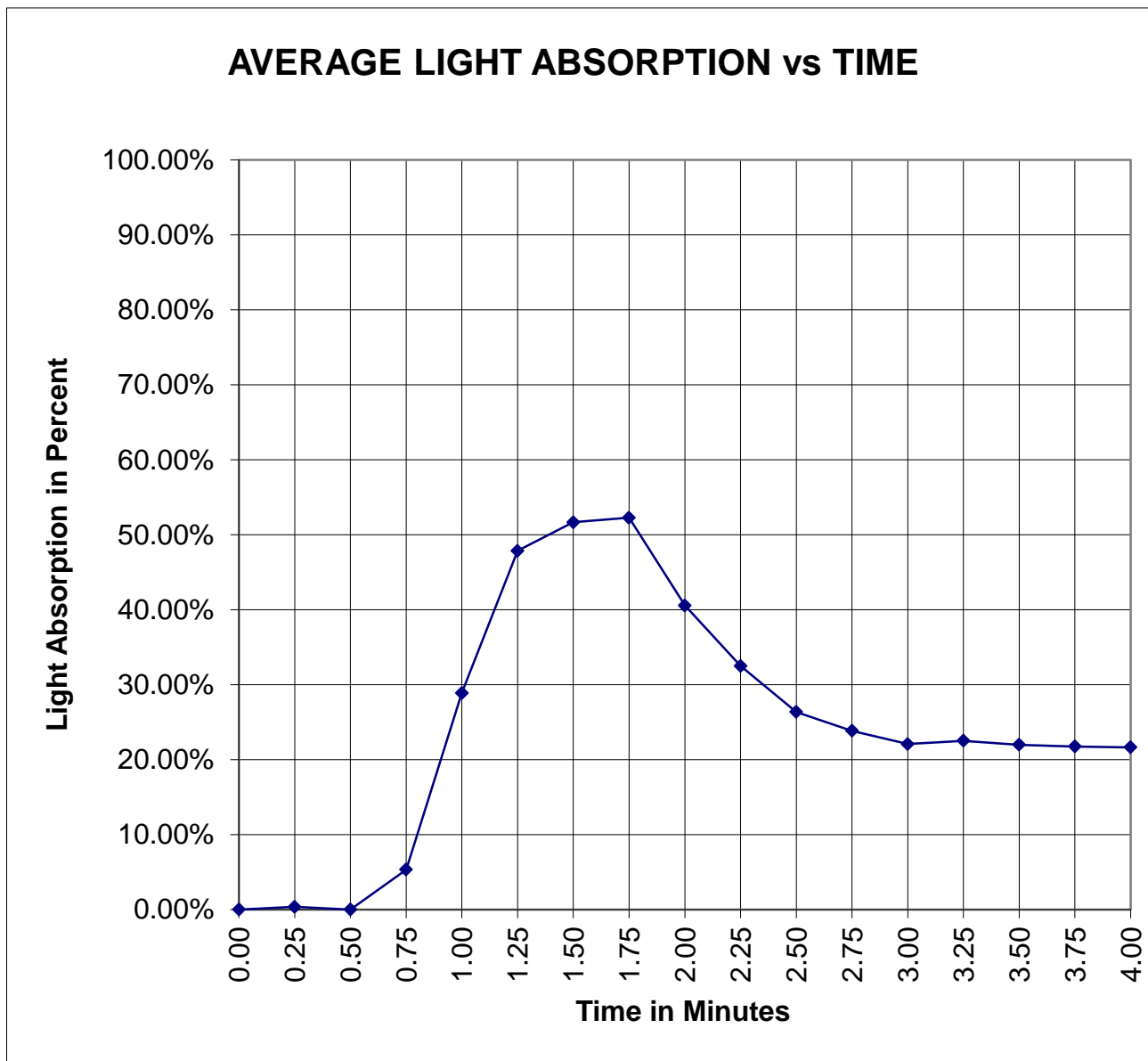
This product meets the requirements of the IBC Chapter 26 Section 2606.4 since the smoke density rating is not greater than 75.



Neil Schultz
 Executive Director



Amirudin Rahim
 Technical Director



**MODIFIED ASTM D635 TESTING
FOR
BENCORE
ON
LIGHTBEN 21MM
VTEC #100-5906-2
TESTED: NOVEMBER 9, 2018**



VTEC Laboratories Inc.

November 12, 2018

Client: Bencore
Via Provinciale Nazzano
50-54033 Carrara
ITALY

Attention: Tito Franzini

Subject:

Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position according to ASTM D635.

Passing Criteria:

Material is classified HB if:

- Flame front does not reach 100 mm mark or,
- Flame front reaches 100 mm mark and the linear burning rate does not exceed 40 mm/min for specimens having a thickness between 3 and 13 mm or 75 mm/min for specimens having a thickness less than 3 mm.

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Material Tested:

- 1) Product Description: Lightben 21mm
- 2) Supplier: Bencore
- 3) Color: Clear
- 4) Specimen Composition: Heterogeneous
- 5) Specimen Size: 125mm x 13mm x 21mm

Test Results:

Specimen #	Did specimen burn when flame removed? (yes/no)	Did flame reach 25 mm mark? (yes/no)	Did flame reach 100 mm mark? (yes/no)	Elapsed burn time after 25 mm mark (sec)	Burned length after 25 mm mark (mm)	Burning Rate (mm/min)
1	Yes	Yes	Yes	168	75	26.8
2	Yes	Yes	Yes	167	75	26.9
3	Yes	Yes	Yes	150	75	30.0
4	-	-	-	-	-	N/A
5	-	-	-	-	-	N/A
6	-	-	-	-	-	N/A
7	-	-	-	-	-	N/A
8	-	-	-	-	-	N/A
9	-	-	-	-	-	N/A
10	-	-	-	-	-	N/A
Average:				161.67	75	27.91

According to ASTM D635, the test is stopped after three specimens have burned to or beyond the 100 mm reference mark, or ten specimens have been tested.

Conclusion:

The material tested met the passing criteria for HB classification according to appendix 1 of ASTM D635 test standard. This product meets the combustibility requirements for classification of Class CC2 of the IBC Chapter 26 Section 2606.4 as the burning rate is less than 1.06 mm/s.



Neil Schultz
Executive Director



Amirudin Rahim
Technical Director

MODIFICATION: Samples are thicker than the required 13mm.

**MODIFIED ASTM D635 TESTING
FOR
BENCORE
ON
LIGHTBEN 21MM
VTEC #100-5906-2
TESTED: NOVEMBER 9, 2018**



VTEC Laboratories Inc.

November 12, 2018

Client: Bencore
Via Provinciale Nazzano
50-54033 Carrara
ITALY

Attention: Tito Franzini

Subject:

Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position according to ASTM D635.

Passing Criteria:

Material is classified HB if:

- Flame front does not reach 100 mm mark or,
- Flame front reaches 100 mm mark and the linear burning rate does not exceed 40 mm/min for specimens having a thickness between 3 and 13 mm or 75 mm/min for specimens having a thickness less than 3 mm.

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1	Yes	Yes	Yes	168	75	26.8
2	Yes	Yes	Yes	167	75	26.9
3	Yes	Yes	Yes	150	75	30.0
4	-	-	-	-	-	N/A
5	-	-	-	-	-	N/A
6	-	-	-	-	-	N/A
7	-	-	-	-	-	N/A
8	-	-	-	-	-	N/A
9	-	-	-	-	-	N/A
10	-	-	-	-	-	N/A
Average:				161.67	75	27.91

According to ASTM D635, the test is stopped after three specimens have burned to or beyond the 100 mm reference mark, or ten specimens have been tested.

Conclusion:

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Neil Schultz
Executive Director



Amirudin Rahim
Technical Director

MODIFICATION: Samples are thicker than the required 13mm.

**ASTM D1929 TESTING
FOR
BENCORE
ON
LIGHTBEN 21MM
VTEC #100-5906-6
TESTED: NOVEMBER 12, 2018**



VTEC Laboratories Inc.

November 13, 2018

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Via Provinciale Nazzano
20-54033 Carrara
ITALY

Attention: Tito Franzini

Subject:

Standard Test Method for Determining Ignition Temperature of Plastics according to ASTM D1929.

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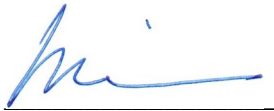
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| 3) Color: | Clear |
| 4) Specimen Composition: | Heterogeneous |
| 5) Average Thickness: | 0.83 in. |

Results:

Flash-Ignition Temperature: **380°C (716°F)**

Self-Ignition Temperature: **460°C (860°F)**

This product meets the requirements of the IBC Chapter 26 Section 2606.4 since the self-ignition temperature is greater than 650°F.



Neil Schultz
Executive Director



Amirudin Rahim
Technical Director

**ASTM D2843 TESTING
FOR
BENCORE
ON
LIGHTBEN 21MM
VTEC #100-5906-4
TESTED: NOVEMBER 12, 2018**



VTEC Laboratories Inc.

November 13, 2018

Client: Bencore
Via Provinciale Nazzano
20-54033 Carrara
ITALY

Attention: Tito Franzini

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DATE: 11/12/18
 PROJECT #: 100-5906-4
 SUPPLIED BY: Bencore
 CONDITIONING TEMP: 23 deg. C
 SPECIAL INSTRUCTIONS: None

DESCRIPTION OF MATERIAL: Lightben 21mm

TEST DATA: LIGHT ABSORPTION

Exp. Time: 4.0 min.

TEST: Time (min.)	LIGHT TRANSMITTANCE (mV)			LIGHT ABSORPTION (%)			
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0.50	30.45	30.36	31.29	0.00%	0.00%	0.00%	0.00%
0.75	25.60	30.11	31.74	15.60%	0.36%	0.00%	5.32%
1.00	19.05	24.39	21.32	37.19%	19.29%	30.14%	28.88%
1.25	9.75	19.73	18.01	67.85%	34.71%	40.99%	47.85%
1.50	13.00	16.60	14.41	57.14%	45.07%	52.79%	51.66%
1.75	18.28	13.47	11.71	39.73%	55.43%	61.63%	52.26%
2.00	20.18	19.44	14.48	33.47%	35.67%	52.56%	40.56%
2.25	21.43	22.95	17.06	29.34%	24.06%	44.10%	32.50%
2.50	21.85	24.03	21.17	27.96%	20.48%	30.64%	26.36%
2.75	22.40	24.04	22.91	26.15%	20.44%	24.93%	23.84%
3.00	22.84	24.27	23.86	24.70%	19.69%	21.82%	22.07%
3.25	22.57	23.81	24.19	25.59%	21.21%	20.74%	22.51%
3.50	22.99	24.05	24.01	24.20%	20.42%	21.33%	21.98%
3.75	23.20	24.05	24.02	23.51%	20.42%	21.30%	21.74%
4.00	22.97	24.27	24.12	24.27%	19.69%	20.97%	21.64%

	Test #1	Test #2	Test#3	Average
Thickness (mm):	21.0	21.0	21.0	21.0
Sample Size (mm):	25 x 25	25 x 25	25 x 25	25 x 25
Weight (g):	4.9	4.9	4.9	4.9
Max Smoke Density %:	67.85%	55.43%	61.63%	61.64%
Smoke Density Rating %:	27.80%	21.69%	27.14%	25.54%
Color of smoke:	Gray	Gray	Gray	Gray

OBSERVATIONS:

The sample ignited Immediately and extinguishedat approximately 1m45s.

The exit sign was clearly visible throughout the test with slight obscuration by drifting smoke while the sample was flaming.

This product meets the requirements of the IBC Chapter 26 Section 2606.4 since the smoke density rating is not greater than 75.


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