QAI LABORATORIES
CERTIFICATION TESTING INSPECTION

8385 White Oak Avenue
Rancho Cucamonga, CA 91730
909.483.0250 ph. | 909.483.0336 fx.

CLIENT: BENCORE
Via Provinciale Nazzano, 20 – 54033
Carrara - ITALY

Test Report No: RJ7235F-2	Date: October 7, 2019

SAMPLE ID: The test samples are identified as: STARLIGHT Extra 21mm.

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received at QAI on September 24, 2019.

TESTING PERIOD: September 30, 2019.

AUTHORIZATION: Testing authorized by Tito Franzini for Proposal No. 19FB06254R1 accepted on September 5, 2019.

TEST REQUESTED: ASTM Designation D635-18 "Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position".

TEST RESULTS: Detailed test results are presented in the subsequent pages of this report

CLASSIFICATION: The submitted sample is classified CC1 in accordance with IBC SECTION 2606.4
See classification requirements on page 2.

Prepared By

Greg Banasky
Senior Technician

Signed for and on behalf of QAI Laboratories, Inc.

Brian Ortega
Senior Analyst / Fire Technology

CONDITIONING: The specimen was placed in the conditioning room (maintained at 73.4 ± 5□ F and a relative humidity of 50 ± 5%) for a minimum of 48 hours prior to testing.

SAMPLE PREPARATION: The samples were received in pieces, 13 mm wide by 125 mm long.

TEST RESULTS:

Number of Specimens Tested:	10
Average Specimen Thickness	19 mm

OBSERVATIONS: The specimens did not continue to flame after the flame application. The flame did not reach the 25 mm mark on any of the specimens tested.

CLASSIFICATION REQUIREMENTS PER IBC SECTION 2606.4

CC1: Plastic materials which have a burning extent of 1 inch (25mm) or less when tested in nominal .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.

*****<<<END OF REPORT>>>*****

QAI LABORATORIES
CERTIFICATION TESTING INSPECTION

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Rancho Cucamonga, CA 91730
909.483.0250 ph. | 909.483.0336 fx.

CLIENT: BENCORE
Via Provinciale Nazzano, 20 – 54033
Carrara - ITALY

Test Report No: RJ7235F-6	Date: October 7, 2019

SAMPLE ID: The test samples are identified as: STARLIGHT Extra 21mm.

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received at QAI on September 24, 2019.

TESTING PERIOD: October 1, 2019.

AUTHORIZATION: Testing authorized by Tito Franzini for Proposal No. 19FB06254R1 accepted on September 5, 2019.

TEST REQUESTED: ASTM D1929-16. "Standard Test Method for Determining Ignition Temperatures of Plastic". Spontaneous (Self) Ignition temperature only.

TEST RESULTS:

Spontaneous (Self)-Ignition Temperature

970º F (521°C) See detailed results on page 3.

REQUIREMENTS: International Building Code, Section 2606.4 Specifications. Light-transmitting plastics, including thermoplastic, thermosetting or reinforced thermosetting plastic material, shall have a self-ignition temperature of 650°F (343°C) or greater where tested in accordance with ASTM D 1929.

CONCLUSION: The submitted sample **meets** the requirements.

Prepared By

Greg Banasky
Senior Technician

Signed for and on behalf of QAI Laboratories, Inc.

Brian Ortega
Senior Analyst / Fire Technology

PROCEDURE:

Test samples were submitted conditioned at 23±2°C / 50±10**%** relative humidity for a minimum of 40 hours.

Spontaneous (Self) Ignition Temperature (SIT)
A *Vertical Hot-Air Ignition Furnace,* QAI Asset Number RG613 similar to that shown below in Fig. 1, consisting of an electrical heating unit and a specimen holder, was set with an air velocity of 25 mm/s and a temperature of 482°C which is 50**°**C below the expected ignition temperature of the product type.

The Specimen Pan was raised to cover the opening of the furnace and the specimen was placed into the pan. The Specimen Pan with the specimen in place was lowered into the furnace with care taken to ensure that the Thermocouples used for temperature measurement remained in their correct position. After the specimen was in place, a calibrated timer QAI Asset Number TU8146 was started while observing for any evidence of flaming combustion, glowing combustion, or a rapid rise in temperature from Thermocouple 1 over Thermocouple 2, QAI Asset Number TC004 and TC001 during the 10 minute test. The lowest air temperature inside the furnace observed by Thermocouple 2 at which a specimen spontaneous' ignition temperature was recorded.

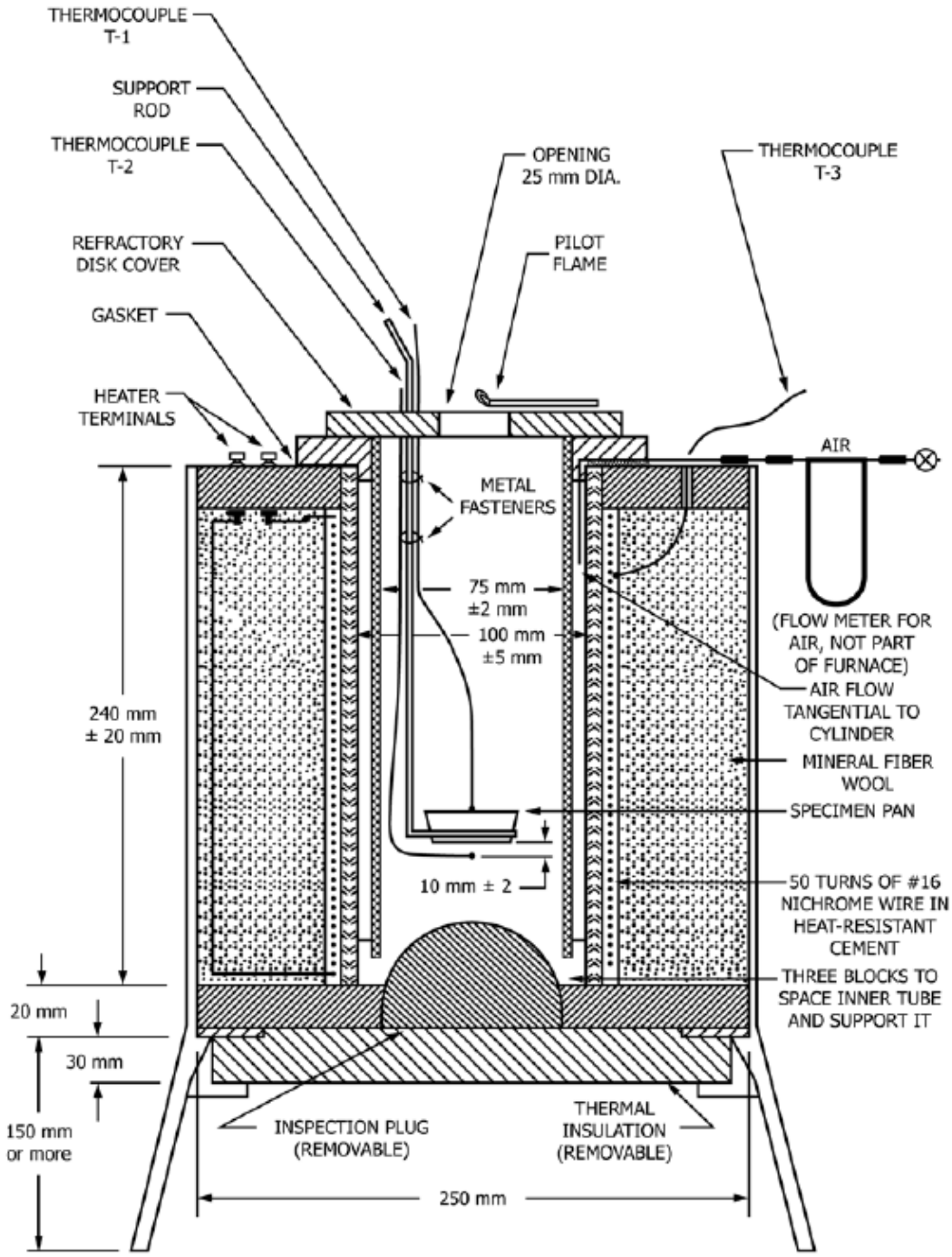

Figure 1: *Vertical Hot-Air Ignition Furnace*

TEST RESULTS:

Spontaneous-Ignition Temperature

Specimen No.	Weight	Furnace Temp.°F	Result
1	3.3 g	940	Did not ignite @ 10:00
2	3.4 g	950	Did not ignite @ 10:00
3	3.0 g	960	Did not ignite @ 10:00
4	3.5 g	**970**	Ignition, : 6:19

OBSERVATIONS: Flaming combustion was observed. Moderate smoke.

Note: *"These test results relate only to the behavior of test specimens under the particular conditions of the test. They are not intended to be used, and shall not be used, to assess the potential fire hazards of a material in use."*

*****<<<END OF REPORT>>>*****

QAI LABORATORIES
CERTIFICATION TESTING INSPECTION

1325 North 108th E. Ave.
Tulsa, OK 74116
918.437.8333 ph. | 918.437.8487 fx.

CLIENT: **BENCORE SRL**
Via Provinciale Nazzano, 20
MS, 54033
ITALY

Test Report No: TJ6790-4	Date: October 4, 2019

SAMPLE ID: The Client submitted and identified the following test material as **"Bencore Starlight Extra 21mm Light Transmitting Plastic".**

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received at QAI facilities on September 27th, 2019

TESTING PERIOD: October 3rd, 2019

AUTHORIZATION: Purchase Order 272/19

TEST PROCEDURE: ASTM D 2843-16, Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics.

TEST RESULTS: Detailed test results are presented in the subsequent pages of this report.

ASTM D2843-16, Section 1.4: *This standard is used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions, but does not by itself incorporate all factors required for fire hazard or fire risk assessment of the materials, products, or assemblies under actual fire conditions.*

Prepared By

L. Casey Holcomb
Fire Test Technician

Signed for and on behalf of QAI Laboratories, Inc.

J. Brian McDonald
Operations Manager

RESULTS:

Sample: **Bencore Starlight Extra 21mm Light Transmitting Plastic**

Test Date: October 3, 2019

Data:

Parameter	Unit	Spec. 1	Spec. 2	Spec. 3	Average
Thickness	Inch	1.25	1.25	1.25	1.25
Spec. Size	Inch	1 X 1	1 X 1	1 X 1	1 X 1
Spec. Weight	Grams	3.2	3.3	3.2	3.2
Propane Pressure	PSI	40	40	40	40.0

Light Absorption:

Time (sec)	Unit	Spec. 1	Spec. 2	Spec. 3	Average
0	%	0	0	0	0.0
15	%	4	6	4	4.7
30	%	14	14	8	12.0
45	%	20	30	10	20.0
60	%	28	32	12	24.0
75	%	42	30	16	29.3
90	%	52	28	18	32.7
105	%	54	28	18	33.3
120	%	52	26	20	32.7
135	%	51	24	20	31.7
150	%	50	24	20	31.3
165	%	48	24	20	30.7
180	%	46	22	20	29.3
195	%	46	22	18	28.7
210	%	46	20	18	28.0
225	%	44	20	18	27.3
240	%	44	20	18	27.3
Photocell Residue	**%**	10	12	12	11.3

Observations:

Parameter	Spec. 1	Spec. 2	Spec. 3
Visibility of 'EXIT' Sign	Good	Good	Good
Smoke Color	Black	Black	Black
Flame Color	Orange	Orange	Orange

Calculated Values:

Value	Unit	Sample
Maximum Smoke Density	%	33.3
Area Under Curve	% - Sec	6150.0
Maximum Area	% - Sec	24000.0
Smoke Density Rating	%	25.6

Graphical Data:

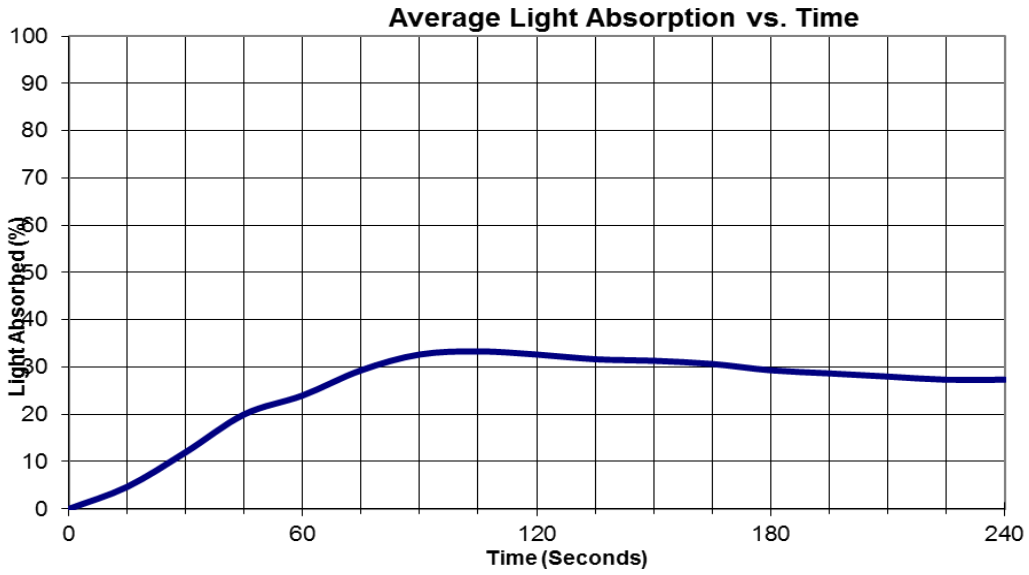

Figure 1. Light Absorption vs. Time Graph

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End of Report

QAI LABORATORIES
CERTIFICATION TESTING INSPECTION

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Tulsa, OK 74116
918.437.8333 ph. | 918.437.8487 fx.

CLIENT: **BENCORE SRL**
Via Provinciale Nazzano, 20
MS, 54033
ITALY

Test Report No: TJ6790-4	Date: October 4, 2019

SAMPLE ID: The Client submitted and identified the following test material as **"Bencore Starlight Extra 21mm Light Transmitting Plastic".**

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received at QAI facilities on September 27th, 2019

TESTING PERIOD: October 3rd, 2019

AUTHORIZATION: Purchase Order 272/19

TEST PROCEDURE: ASTM D 2843-16, Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics.

TEST RESULTS: Detailed test results are presented in the subsequent pages of this report.

ASTM D2843-16, Section 1.4: *This standard is used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions, but does not by itself incorporate all factors required for fire hazard or fire risk assessment of the materials, products, or assemblies under actual fire conditions.*

Prepared By

L. Casey Holcomb
Fire Test Technician

Signed for and on behalf of QAI Laboratories, Inc.

J. Brian McDonald
Operations Manager

RESULTS:

Sample: **Bencore Starlight Extra 21mm Light Transmitting Plastic**

Test Date: October 3, 2019

Data:

Parameter	Unit	Spec. 1	Spec. 2	Spec. 3	Average
Thickness	Inch	1.25	1.25	1.25	1.25
Spec. Size	Inch	1 X 1	1 X 1	1 X 1	1 X 1
Spec. Weight	Grams	3.2	3.3	3.2	3.2
Propane Pressure	PSI	40	40	40	40.0

Light Absorption:

Time (sec)	Unit	Spec. 1	Spec. 2	Spec. 3	Average
0	%	0	0	0	0.0
15	%	4	6	4	4.7
30	%	14	14	8	12.0
45	%	20	30	10	20.0
60	%	28	32	12	24.0
75	%	42	30	16	29.3
90	%	52	28	18	32.7
105	%	54	28	18	33.3
120	%	52	26	20	32.7
135	%	51	24	20	31.7
150	%	50	24	20	31.3
165	%	48	24	20	30.7
180	%	46	22	20	29.3
195	%	46	22	18	28.7
210	%	46	20	18	28.0
225	%	44	20	18	27.3
240	%	44	20	18	27.3
Photocell Residue	**%**	10	12	12	11.3

Observations:

Parameter	Spec. 1	Spec. 2	Spec. 3
Visibility of 'EXIT' Sign	Good	Good	Good
Smoke Color	Black	Black	Black
Flame Color	Orange	Orange	Orange

Calculated Values:

Value	Unit	Sample
Maximum Smoke Density	%	33.3
Area Under Curve	% - Sec	6150.0
Maximum Area	% - Sec	24000.0
Smoke Density Rating	%	25.6

Graphical Data:

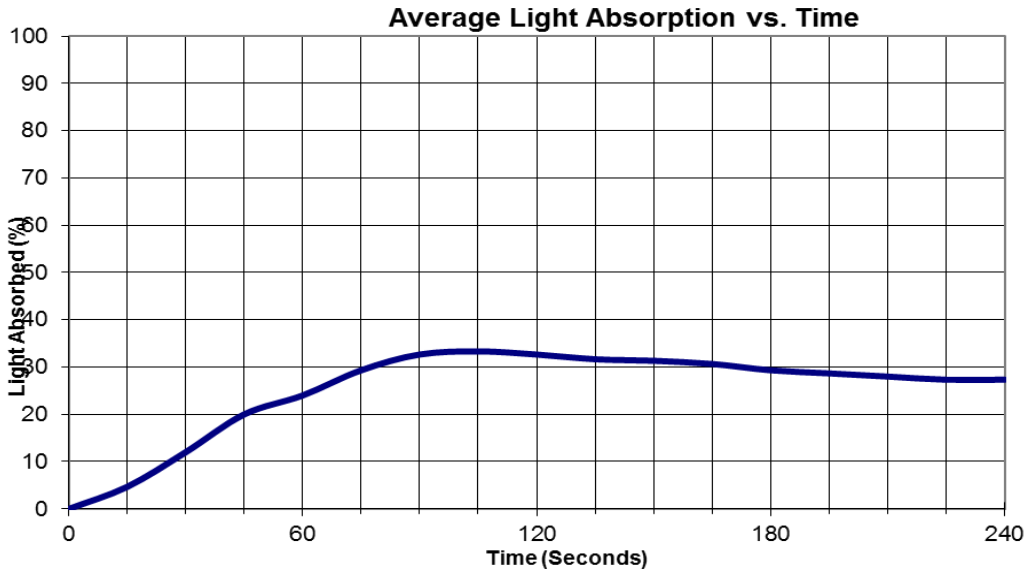

Figure 1. Light Absorption vs. Time Graph

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End of Report

QAI LABORATORIES
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CLIENT: BENCORE
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Carrara - ITALY

Test Report No: RJ7235F-2	Date: October 7, 2019

SAMPLE ID: The test samples are identified as: STARLIGHT Extra 21mm.

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received at QAI on September 24, 2019.

TESTING PERIOD: September 30, 2019.

AUTHORIZATION: Testing authorized by Tito Franzini for Proposal No. 19FB06254R1 accepted on September 5, 2019.

TEST REQUESTED: ASTM Designation D635-18 "Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position".

TEST RESULTS: Detailed test results are presented in the subsequent pages of this report

CLASSIFICATION: The submitted sample is classified CC1 in accordance with IBC SECTION 2606.4
See classification requirements on page 2.

Prepared By

Greg Banasky
Senior Technician

Signed for and on behalf of QAI Laboratories, Inc.

Brian Ortega
Senior Analyst / Fire Technology

CONDITIONING: The specimen was placed in the conditioning room (maintained at 73.4 ± 5□ F and a relative humidity of 50 ± 5%) for a minimum of 48 hours prior to testing.

SAMPLE PREPARATION: The samples were received in pieces, 13 mm wide by 125 mm long.

TEST RESULTS:

Number of Specimens Tested:	10
Average Specimen Thickness	19 mm

OBSERVATIONS: The specimens did not continue to flame after the flame application. The flame did not reach the 25 mm mark on any of the specimens tested.

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CLIENT: BENCORE
Via Provinciale Nazzano, 20 – 54033
Carrara - ITALY

Test Report No: RJ7235F-6	Date: October 7, 2019

SAMPLE ID: The test samples are identified as: STARLIGHT Extra 21mm.

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received at QAI on September 24, 2019.

TESTING PERIOD: October 1, 2019.

AUTHORIZATION: Testing authorized by Tito Franzini for Proposal No. 19FB06254R1 accepted on September 5, 2019.

TEST REQUESTED: ASTM D1929-16. "Standard Test Method for Determining Ignition Temperatures of Plastic". Spontaneous (Self) Ignition temperature only.

TEST RESULTS:

Spontaneous (Self)-Ignition Temperature

970º F (521°C) See detailed results on page 3.

REQUIREMENTS: International Building Code, Section 2606.4 Specifications. Light-transmitting plastics, including thermoplastic, thermosetting or reinforced thermosetting plastic material, shall have a self-ignition temperature of 650°F (343°C) or greater where tested in accordance with ASTM D 1929.

CONCLUSION: The submitted sample **meets** the requirements.

Prepared By

Greg Banasky
Senior Technician

Signed for and on behalf of QAI Laboratories, Inc.

Brian Ortega
Senior Analyst / Fire Technology

PROCEDURE:

Test samples were submitted conditioned at 23±2°C / 50±10**%** relative humidity for a minimum of 40 hours.

Spontaneous (Self) Ignition Temperature (SIT)
A *Vertical Hot-Air Ignition Furnace,* QAI Asset Number RG613 similar to that shown below in Fig. 1, consisting of an electrical heating unit and a specimen holder, was set with an air velocity of 25 mm/s and a temperature of 482°C which is 50**°**C below the expected ignition temperature of the product type.

The Specimen Pan was raised to cover the opening of the furnace and the specimen was placed into the pan. The Specimen Pan with the specimen in place was lowered into the furnace with care taken to ensure that the Thermocouples used for temperature measurement remained in their correct position. After the specimen was in place, a calibrated timer QAI Asset Number TU8146 was started while observing for any evidence of flaming combustion, glowing combustion, or a rapid rise in temperature from Thermocouple 1 over Thermocouple 2, QAI Asset Number TC004 and TC001 during the 10 minute test. The lowest air temperature inside the furnace observed by Thermocouple 2 at which a specimen spontaneous' ignition temperature was recorded.

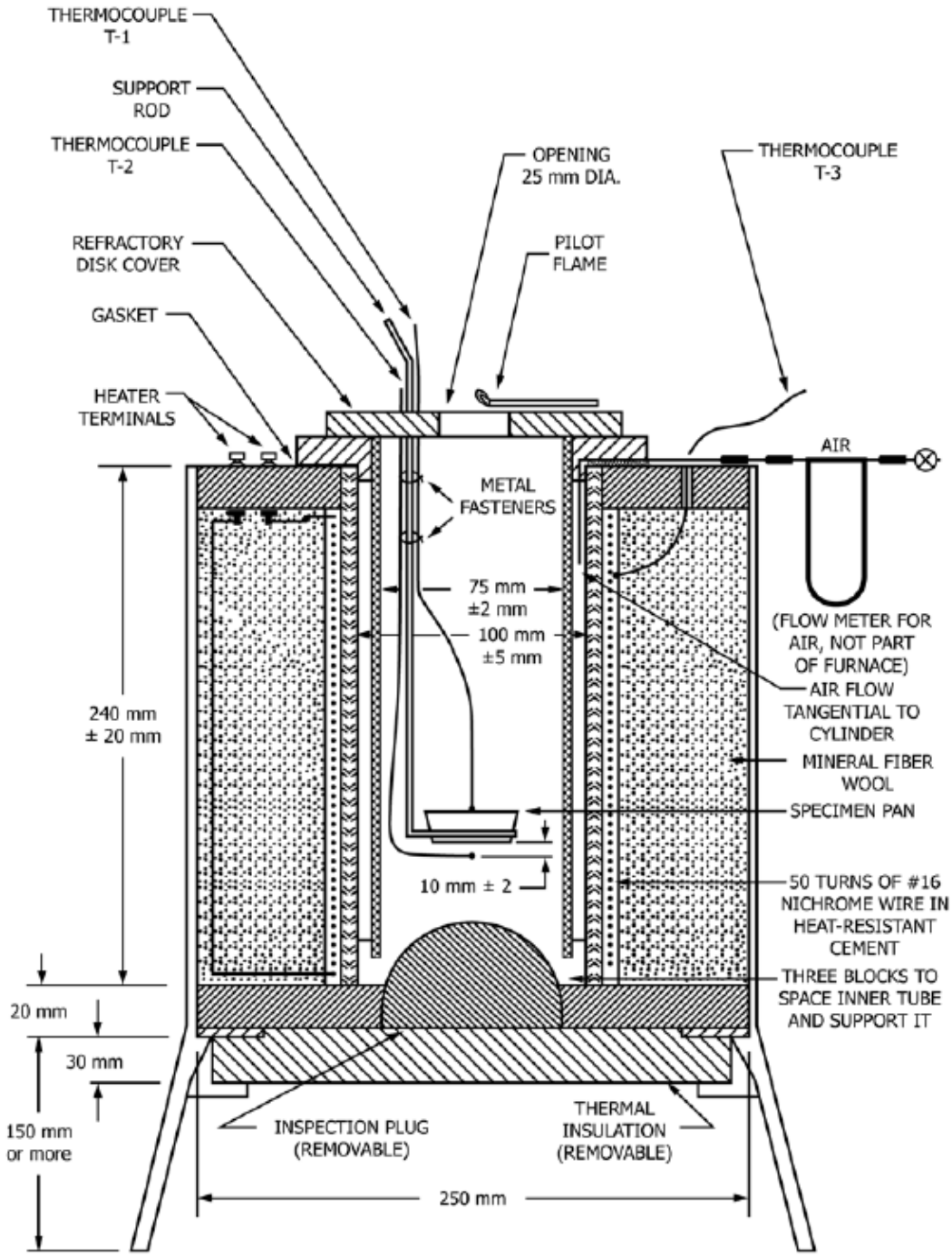

Figure 1: *Vertical Hot-Air Ignition Furnace*

TEST RESULTS:

Spontaneous-Ignition Temperature

Specimen No.	Weight	Furnace Temp.°F	Result
1	3.3 g	940	Did not ignite @ 10:00
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4	3.5 g	**970**	Ignition, : 6:19

OBSERVATIONS: Flaming combustion was observed. Moderate smoke.

Note: *"These test results relate only to the behavior of test specimens under the particular conditions of the test. They are not intended to be used, and shall not be used, to assess the potential fire hazards of a material in use."*

*****<<<END OF REPORT>>>*****