



April 08, 2011

AFS Boru Sanayi AS
Mrs. Betul Baskaya
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Ostim, Ankara 06370
Turkey

Our Reference: MH48069/11CA08190

Subject: Report of Surface Burning Characteristics Tests on Samples As Submitted By
AFS Boru Sanayi A S

Dear Mrs. Baskaya:

This is a Report summarizing the results of tests conducted under the Commercial Inspection and Testing Services (CITS) program identified as Assignment No. 11CA08190.

GENERAL:

The results relate only to items tested.

METHOD:

Each test was conducted in accordance with Standard ANSI/UL723, Tenth Edition, dated September 10, 2008, "Test for Surface Burning Characteristics of Building Materials", (ASTM E84-10).

The test determines the Surface Burning Characteristics of the material, specifically the flame spread and smoke developed indices when exposed to fire.

The maximum distance the flame travels along the length of the sample from the end of the igniting flame is determined by observation. The Flame Spread Index of the material is derived by plotting the progression of the flame front on a time-distance basis, ignoring any flame front recession, and using the equations described below:

- A. $CFS = 0.515 A_T$ when A_T is less than or equal to 97.5 minute-foot.
- B. $CFS = 4900/(195-A_T)$ when A_T is greater than 97.5 minute-foot.

Where A_T = total area under the time distance curve expressed in minute-foot.

The Smoke Developed Index (SDI) is determined by rounding the Calculated Smoke Developed (CSD) as described in UL 723. The CSD is determined by the output of photoelectric equipment operating across the furnace flue pipe. A curve is developed by plotting the values of light absorption (decrease in cell

output) against time. The CSD is derived by expressing the net area under the curve for the material tested as a percentage of the area under the curve for untreated red oak.

The CSD is expressed as:

$$\text{CSD} = (A_m/A_{ro}) \times 100$$

Where:

CSD = Calculated Smoke Developed

A_m = the area under the curve for the test material.

A_{ro} = the area under the curve for untreated red oak.

SAMPLES:

The samples utilized in this investigation were neither prepared nor selected by a Laboratories' representative such that no verification of composition can be provided.

Sample Description

Test No.	System
1	PU AFS CONNECTORS
2	NEOPRENE AFS CONNECTORS

Each test sample was supported by 2 in. hexagonal poultry netting supported by 1/4 in. diameter steel rods spaced 2 ft. apart.

RESULTS:

The results are tabulated below are considered applicable only to the specific samples tested.

Data sheets and graphical plots of flame travel versus time and smoke developed versus time are also enclosed.

Table 1: Test Summary

Test No.	Test Code	Sample Description	CFS Calculated Flame Spread	FSI Flame Spread Index	CSD Calculated Smoke Developed	SDI Smoke Developed Index
1	04081107	PU AFS CONNECTORS	0	0	0.0	0
2	04081109	NEOPRENE AFS CONNECTORS	0.00	0	0.0	0

The Classification Marking of Underwriters Laboratories Inc. on the product is the only method provided by Underwriters Laboratories Inc. to identify products which have been produced under its Classification and Follow-Up Service. No use of a Classification Marking has been authorized as a result of this investigation.

Since the anticipated work has been completed, we have instructed our Accounting Department to terminate the investigation and invoice you for the charges incurred to date.

Should you have any questions, please contact the undersigned.

Very truly yours

Reviewed by:



Jamila Shawon (ext. 42607)
Senior Project Engineer
Fire Protection Division

James Smith (ext. 42666)
Staff Engineering Associate
Fire Protection Division

Project: 11CA08190
Tested by: SCOTT KNIGHTON

File: MH48069
Engineer: JAMILA SHAWON

TestCode: 04081107
Date: 2011-04-08

TEST METHOD: The test was conducted in accordance with UL 723, Tenth Edition.

Client Name: AFS BORU SANAYI A S

Test Duration: 10 minutes Test No.: 1

Hot Test: No

Mounting: Rods & Wire Test Type: CITS

Burn-Out Required: No

Test Sample: PU AFS CONNECTORS

FLAME SPREAD RESULTS

Flame Spread Data

Distance (Feet)	Time (Sec)
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Calculated Flame Spread (CFS): 0.00

Flame Spread Index (FSI): 0

Time to Ignition (sec): None

Maximum Flame Spread (ft): 0.0

Area Under the Flame Spread Curve (ft.-min.): 0.0

SMOKE RESULTS

Calculated Smoke Developed (CSD): 0.0

Smoke Developed Index (SDI): 0

Area Under the Smoke Curve (Obs-min.): 0.00

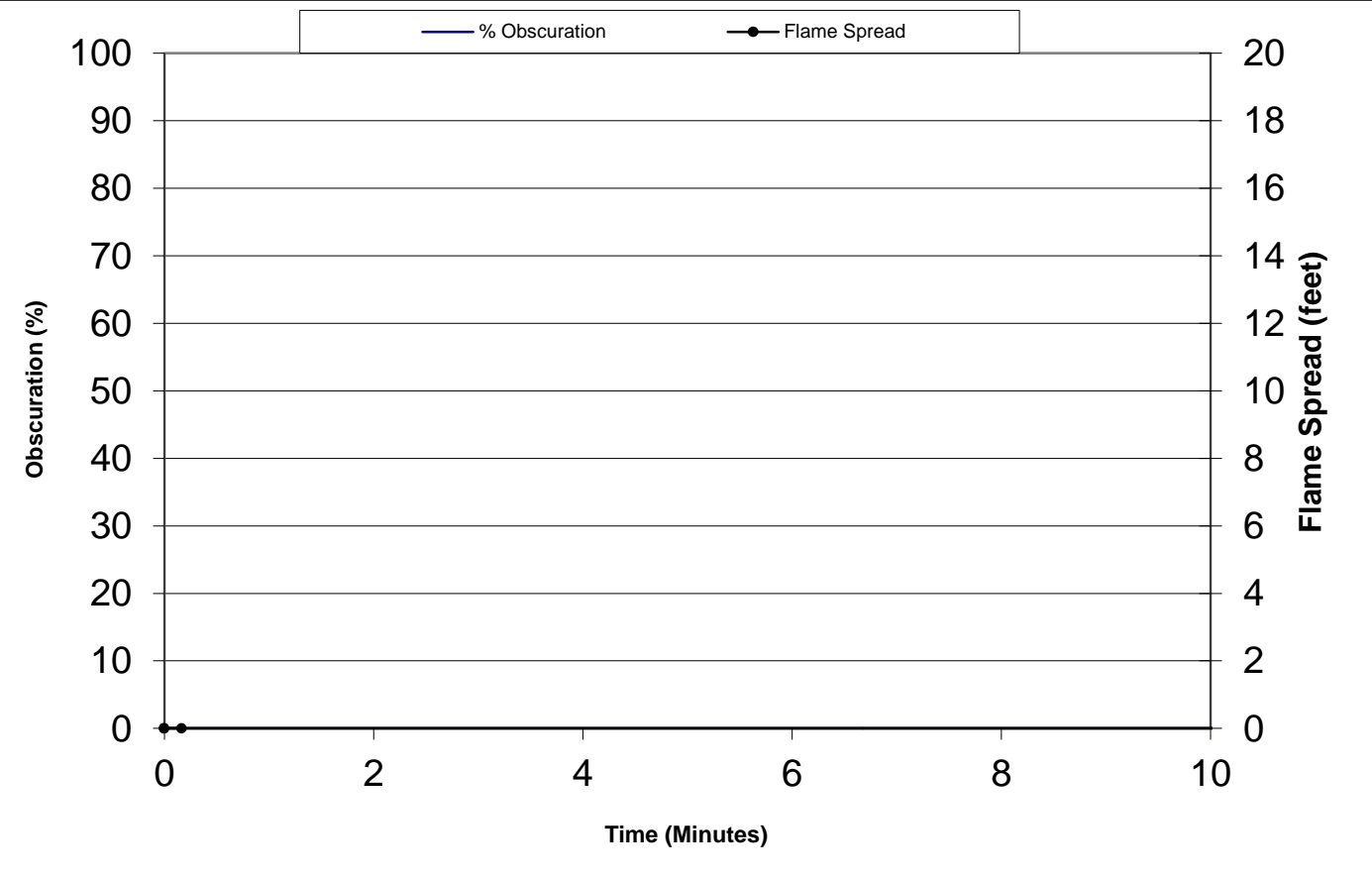
Area Under Red Oak Curve (Obs-min.): 70.49

Post-Test Observations

Discoloration (Feet From Burner): 7

Flame Spread / Smoke Results

AFS BORU SANAYI A S
PU AFS CONNECTORS



Test Num.: 1
MH48069 /
11CA08190
04081107

Flame Spread Index: 0
Smoke Developed Index: 0

Max. Flame Spread (ft.): 0.0

Project: 11CA08190
Tested by: SCOTT KNIGHTON

File: MH48069
Engineer: JAMILA SHAWON

TestCode: 04081109
Date: 2011-04-08

TEST METHOD: The test was conducted in accordance with UL 723, Tenth Edition.

Client Name: AFS BORU SANAYI A S

Test Duration: 10 minutes Test No.: 2

Hot Test: No

Mounting: Rods & Wire Test Type: CITS

Burn-Out Required: No

Test Sample: NEOPRENE AFS CONNECTORS

FLAME SPREAD RESULTS

Flame Spread Data

Distance (Feet)		Time (Sec)
Ignition		78

Calculated Flame Spread (CFS): 0.00

Flame Spread Index (FSI): 0

Time to Ignition (sec): 78

Maximum Flame Spread (ft): 0.0

Area Under the Flame Spread Curve (ft.-min.): 0.0

SMOKE RESULTS

Calculated Smoke Developed (CSD): 0.0

Smoke Developed Index (SDI): 0

Area Under the Smoke Curve (Obs-min.): 0.00

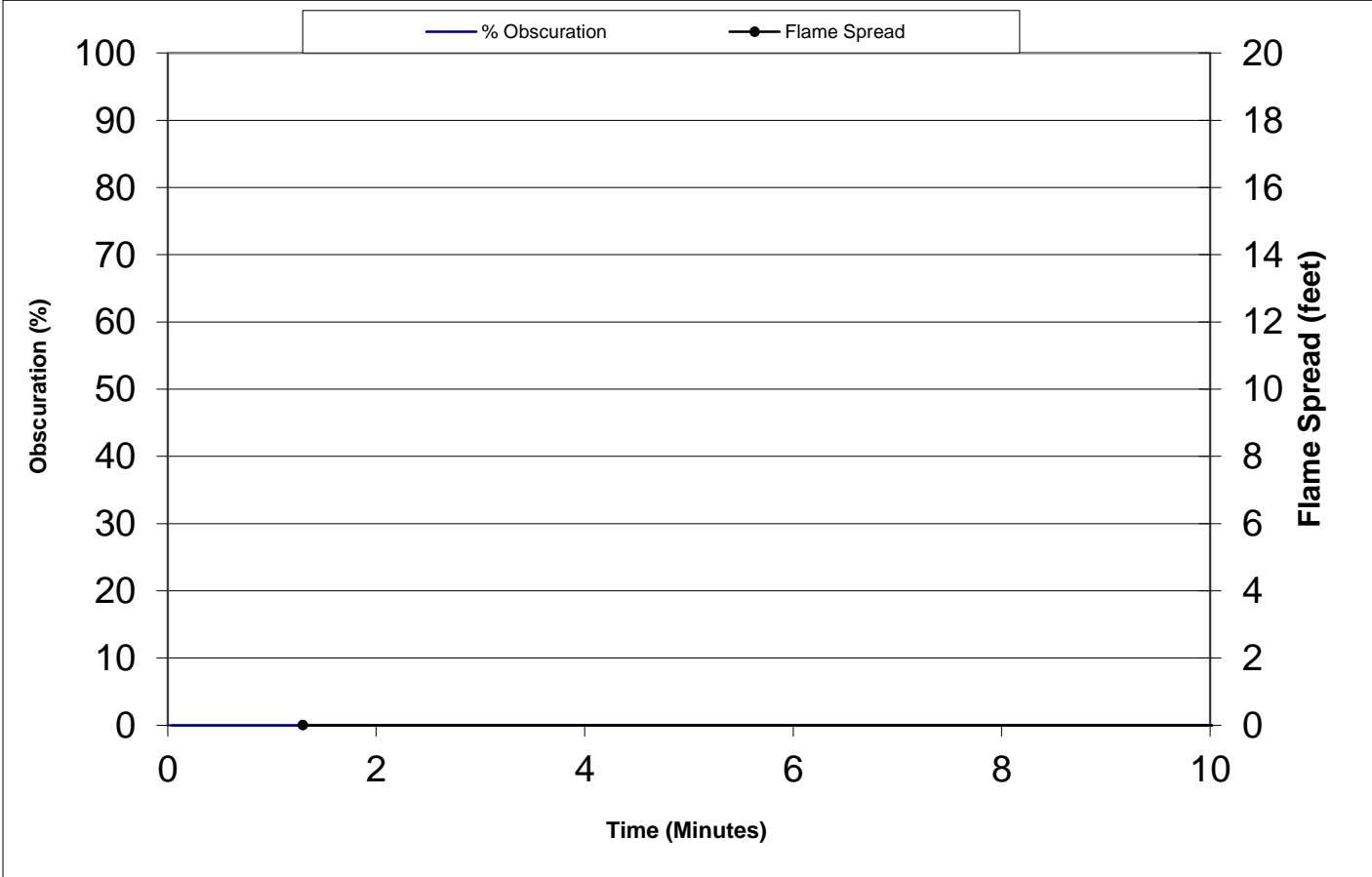
Area Under Red Oak Curve (Obs-min.): 70.49

Post-Test Observations

Discoloration (Feet From Burner): 6

Flame Spread / Smoke Results

AFS BORU SANAYI A S
NEOPRENE AFS CONNECTORS



Test Num.: 2
MH48069 /
11CA08190
04081109

Flame Spread Index: 0
Smoke Developed Index: 0
Max. Flame Spread (ft.): 0.0