June 30, 2015
Revised: July 1, 2015

Mrs. Betul Baskaya
AFS BORU SANAYI A S
Ivedik O S B
1468 Cad Eski 24 Cad No 153
Ostim , Ankara 06370
Turkey

Our Reference: Project 4786920284

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 a test conducted under the Commercial Inspection and Testing Services (CITS) program of UL LLC (UL) identified as Assignment No. 4786920284.

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 with revisions through August 12, 2013, "Test for Surface Burning Characteristics of Building Materials", (ASTM E84-11).

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:

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

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 | SEMIAFS Al flexible duct |

Each test sample was supported with 1/4 in. diameter uncoated steel rods and placed at 2 ft intervals.

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 | 06301510 | SEMIAFS Al flexible duct | 0 | 0 | 0.0 | 0 |

The Classification Marking of UL on the product is the only method provided by UL 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

Jamila Shawon (ext. 42607)

Building Materials & Systems

Reviewed by:

James Smith (ext. 42666)

Building Materials & Systems

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 | Test Type: | Developmental | Burn-Out Required: | No |

**Test Sample:** SEMIAFS Al flexible duct

FLAME SPREAD RESULTS

**Flame Spread Data**

| **Distance (Feet)** | | **Time (Sec)** |
|---|---|---|

**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

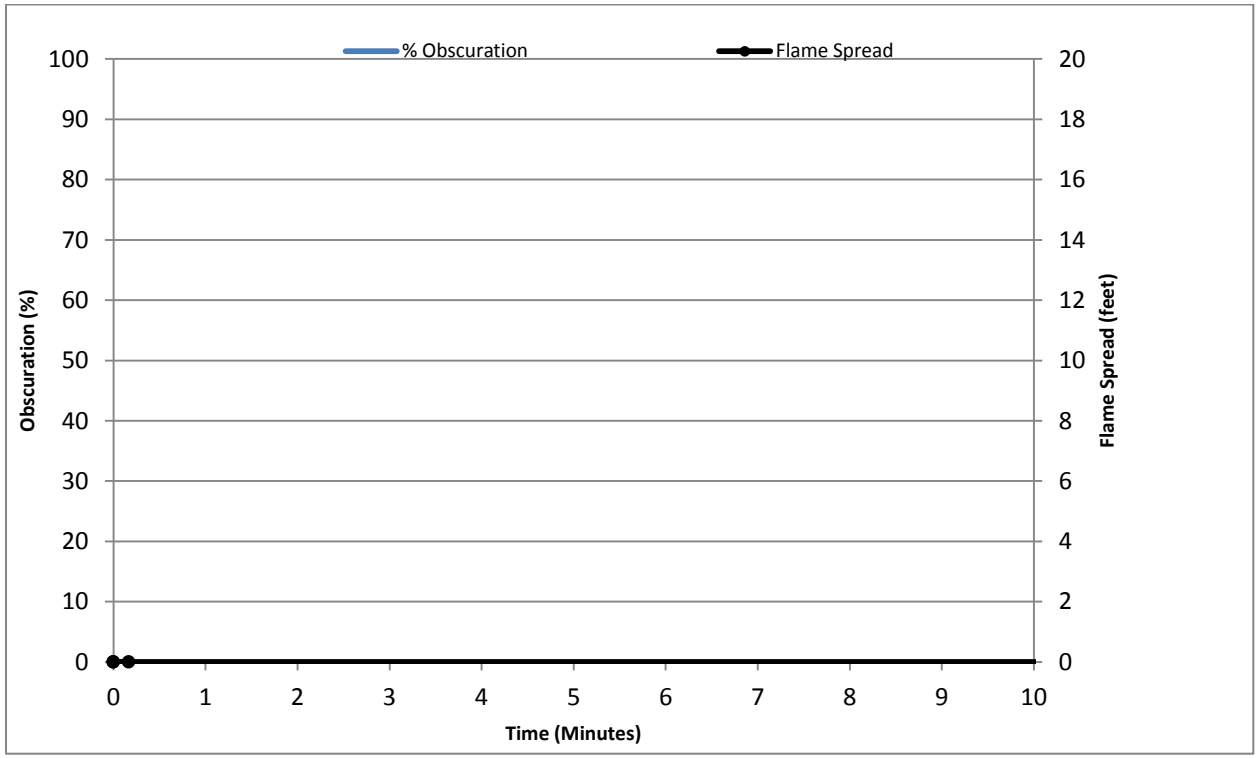
**Area Under the Smoke Curve (Obs-min.):** 0.00
**Area Under Red Oak Curve (Obs-min.):** 84.63

Post-Test Observations

**Discoloration (Feet From Burner):** 6

# Flame Spread / Smoke Results

## AFS BORU SANAYI A S
### SEMIAFS Al flexible duct




Test Num.: 1
TBD / 4786920284
06301510

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