



TEST REPORT

CLIENT: Wolfgang Decibel LLC
4214 C Domino Ave, Unit C
Charleston, SC 29405
United States

Attention: Mauro Donadel

Table with 2 columns: Test Report No: 654:030454, Date: May 26, 2010

REFERENCE: Tulsa Test Request Form
SUBJECT: Evaluation of 3" and 6" Ventilwest Ducting for compliance to the applicable sections of UL 181-03
SAMPLE ID: 50ft of aluminum material used in the ducting, Ten (10) 6" ducts, and Ten (10) 3" ducts were received from client on 2/15/10 in good condition.
PROCEDURE: Evaluation of samples was in accordance with the applicable sections UL 181-03 "Factory Made Air Ducts and Air Connectors". No revisions to this report will be allowed after 90 days of the report date.
TEST DATE: 2/22/10 - 5/26/10
RESULTS: Results are on the following pages
CERTIFICATION: The tests reported here were conducted under the continuous direct supervision of SGS U.S. Testing Company Inc., Tulsa, OK.

SIGNED FOR AND ON BEHALF OF
SGS U.S. TESTING COMPANY INC.

[Signature]
S. Scott Parkhurst
Tulsa Technical Manager

[Signature]
J. Brian McDonald
Tulsa Branch Manager



Test Results and Procedure:

Purpose: This evaluation was conducted to determine compliance with the applicable sections of UL 181-03 (Factory Made Air Ducts and Air Connectors).

4.0 General **REFERENCE**

5.0 Tests for Surface Burning Characteristics **PASS**

Test Specimen: Material used in the Ventilwest Ducting
Flame Spread Index*: **1**
Smoke Developed Value*: **40**

*Rounded off to the nearest 5 units.

Observations:

Ignition occurred at 12 seconds. The following observations were also noted:

Rating:

Rating was performed in accordance with section 5.2 and 5.3 of UL 181-05.

- Class 0 material is described as having a surface burning characteristic of zero for flame spread index and smoke generation.
- Class 1 material is described as having a surface burning characteristic of a flame spread index of 25 with evidence of continued progressive combustion and smoke development index of not more than 50.

Classification of Material: **Class 1**

6.0 Flame Resistance Test **NA**

This section is applicable to manufacturer supplied joining material materials.

7.0 Bending Test **PASS**

Conditioning

Samples used were conditioned for 48 hours in an environment that maintained 70°F and 95% relative humidity.

Procedure

Samples were prepared in accordance with section 15.2 and 15.3 and subjected to 180° mandrel bend that was equal to the inside diameter of the test sample. The bending moment was repeated five times and after each moment the ducting was returned to its original position.

3" Ventilwest Results

Sample 1 – No deformation or 20% reduction of the internal cross sectional area was observed.
Sample 2 - No deformation or 20% reduction of the internal cross sectional area was observed.
Sample 3 - No deformation or 20% reduction of the internal cross sectional area was observed.

6" Ventilwest Results

Sample 1 – No deformation or 20% reduction of the internal cross sectional area was observed.
Sample 2 - No deformation or 20% reduction of the internal cross sectional area was observed.
Sample 3 - No deformation or 20% reduction of the internal cross sectional area was observed.

8.0 Flame Penetration Test

PASS

Conditioning

Samples used were conditioned for 48 hours in an environment that maintained 70°F and 95% relative humidity.

Procedure

The sample was tested in accordance with sections 8.2 through 8.5. The samples were subjected to a interior flame produced by furnace described in Figure 8.1 for 30 minutes.

Results

The sample withstood flame penetration and showed no evidence of perforation that would allow direct passage of flame or gases. The sample also showed no evidence of ignition occurring on the interior or exterior surfaces.

9.0 Burning Test

PASS

Procedure

Six samples were tested in accordance were prepared and tested in accordance with Sections 9.3 through 9.9.

Results

The samples did not continue to burn progressively, ignite, or drop flaming particles.

10.0 Corrosion Resistance

PASS

Procedure

The samples were subjected to salt spray testing in accordance with ASTM B117 using a salt solution of 20% for 96 hours.

Results

The sample showed no signs of flaking, cracking, or any other evidence of corrosion when observed under a 25 power magnification.

11.0 Mold Growth and Humidity Test

PASS

Samples were prepared with the following method: 39 grams of Agar were dissolved in 1 liter of heated water. The agar medium and two 1 inch square pieces of tile were autoclaved at 15psi for 15 minutes. A section of the sample was applied to the tile and placed in a Petri dish. The agar medium was then introduced to the petri dish. The entire surface was then inoculated with Chaetomium Globosium.

A control specimen of tile only was prepared in the method stated as above and was inoculated with Chaetomium Globosium.

All samples and the control specimen were placed in a temperature and humidity controlled incubator for 60 days. During the 60 day period the temperature and humidity were monitored and maintained at 82.4 to 86°F and 85-96% relative humidity.

Following the 60 days, the samples were removed and evaluated for fungus and micro-organism growth. SGS has devised a system of rating the growth as listed below:

Observation	Rating
No Traces of Growth	0
Traces of Growth (less than 10%)	1
Light Growth (10 to 30%)	2
Medium Growth (30 to 60%)	3
Heavy Growth (60% to complete coverage)	4

Any rating above 0 does not meet the requirement of UL 181 which specifies *“the samples must be evaluated for the extent of the mold growth..”* Ratings 1 through 4 are considered for informational purposes to provide the client with a conclusion as to the pervasiveness of growth, should growth be evident during the evaluation.

Test Start Date: 2/22/10		Test End Date: 4/23/10	
Total Incubation Period: 60 Days			
Specimen ID	Rating	Deformation of Material	
1	0	None	
2	0	None	
3	0	None	
Control	4	None	

12.0 Temperature Test

PASS

12.1 Low Temperature

Conditioning

Samples used were conditioned for 48 hours in an environment that maintained 70°F and 95% relative humidity.

Procedure

The sample was placed in a conditioned environment that maintained a temperature of 0°F for 24 hours.

Results

Sample 1 - No deformation or deterioration was observed
Sample 2 - No deformation or deterioration was observed
Sample 3 - No deformation or deterioration was observed

12.2 High Temperature

Conditioning

Samples used were conditioned for 48 hours in an environment that maintained 70°F and 50% relative humidity.

Procedure

The sample was placed in a conditioned environment that maintained a temperature of 180°F for 60 days.

Results

Sample 1 - No deformation or deterioration was observed
Sample 2 - No deformation or deterioration was observed
Sample 3 - No deformation or deterioration was observed

13.0 Puncture Test

PASS

Procedure

A 3/8" steel rod and a 9/16" diameter impact foot weighing 2 lb was used to impact the samples used in section 12.1 and 12.2. A similar fixture described in figure 13.1 of UL 181 was used for this testing. The testing was conducted in an environment of 70°F and 50% relative humidity.

Low Temperature Sample Results:

Sample 1

Impact 1 - No Penetration
Impact 2 - No Penetration
Impact 3 - No Penetration



Sample 2

Impact 1 - No Penetration
Impact 2 - No Penetration
Impact 3 - No Penetration

Sample 3

Impact 1 - No Penetration
Impact 2 - No Penetration
Impact 3 - No Penetration

High Temperature Sample Results:

Sample 1

Impact 1 - No Penetration
Impact 2 - No Penetration
Impact 3 - No Penetration

Sample 2

Impact 1 - No Penetration
Impact 2 - No Penetration
Impact 3 - No Penetration

Sample 3

Impact 1 - No Penetration
Impact 2 - No Penetration
Impact 3 - No Penetration

14.0 Static Load

PASS

Procedure

The samples were installed in accordance with the manufacturer instructions and a steel rod was inserted in the middle of the duct. A total load of 5 lbs was on the rod and left for 24 hours in an environment of 70°F and 50% relative humidity.

Results

The materials exhibited no signs of rupture, rips, tears, separation, or any other deformation that would result in the material to be unusable.

15.0 Impact Test

PASS

Procedure

The samples were installed in accordance with the manufacturer instructions. A canvas sand bag weighing a total of 15lbs was dropped on the duct supported on a flat surface from a distance of 2 ft.

Results

Sample 1: The materials exhibited no signs of rupture, rips, tears, separation, or any other deformation that would result in the material to be unusable.

Sample 2: The materials exhibited no signs of rupture, rips, tears, separation, or any other deformation that would result in the material to be unusable.

Sample 3: The materials exhibited no signs of rupture, rips, tears, separation, or any other deformation that would result in the material to be unusable.

16.0 Erosion Test

PASS

Procedure

Sample 1 used for the Impact Testing (Section 15) were used to conduct the testing of this section. The ducting was tested in accordance with section 16. The ducting was subjected to an airflow velocity of 2500 ft/min in an 70°F and 50% relative humidity environment.

3" Ventilwest Results Results

The material did not break away, crack, peel, flake off, or show signs of delamination.

6" Ventilwest Results Results

The material did not break away, crack, peel, flake off, or show signs of delamination.

17.0 Pressure Test

PASS

Procedure

The ducting was sealed using steel NPT reducers and Stainless Steel clamps. The ducting was then pressurized to 30 in. of water column for a period over a period and 45 seconds and allowed to maintain the pressure for a 1 hour period.

3" Ventilwest Results

The material did not break away, crack, peel, flake off, or show signs of delamination. The material exhibited no signs of rupture, rips, tears, separation, or any other deformation that would result in the material to be unusable.

6" Ventilwest Results

The material did not break away, crack, peel, flake off, or show signs of delamination. The material exhibited no signs of rupture, rips, tears, separation, or any other deformation that would result in the material to be unusable.



18.0 Collapse Test

PASS

Procedure

The samples were installed in accordance with the manufacturer instructions and tested in accordance with section 18. The samples were subjected to a negative pressure of 2.5 inches of water for a total of 1 hour.

3" Ventilwest Results

The samples showed no signs of collapsing, damage, or any other deformation that would effect the performance of the product.

6" Ventilwest Results

The samples showed no signs of collapsing, damage, or any other deformation that would effect the performance of the product.

19.0 Tension Test

PASS

Procedure

The samples were installed in accordance with the manufacturer instructions. The upper collar of the ducting was attached to a secure point and a load of 25 lbf was attached to the lower collar. The 25 lbf load was allowed to be maintained for a 24 hour period.

3" Ventilwest Results

The samples exhibited no signs of rupture, rips, tears, separation, or any other deformation that would result in the material to be unusable.

6" Ventilwest Results

The samples exhibited no signs of rupture, rips, tears, separation, or any other deformation that would result in the material to be unusable.

20. Torsion Test

PASS

Procedure

The samples were installed in accordance with the manufacturer instructions. The sample was subjected to a torque of 25 ft/lbs and returned to its original position. The torque cycle was repeated 5 times.

3" Ventilwest Results

The samples exhibited no signs of rupture, rips, tears, collapse, separation, or any other deformation that would result in the material to be unusable.

6" Ventilwest Results

The samples exhibited no signs of rupture, rips, tears, collapse, separation, or any other deformation that would result in the material to be unusable.



21. Leakage Test

PASS

Procedure

The samples subjected to Static Load, Impact, Pressure, and Tension were tested for leakage upon completion of the tests stated above. These samples were pressurized to ½ in of water column for a 1 hour period. The internal pressure was monitored to establish if leakage occurred.

3" Ventilwest Results

Static Load Sample -	No Leakage
Impact Load Sample -	No Leakage
Pressure Sample -	No Leakage
Tension Sample -	No Leakage

6" Ventilwest Results

Static Load Sample -	No Leakage
Impact Load Sample -	No Leakage
Pressure Sample -	No Leakage
Tension Sample -	No Leakage

END OF REPORT