

## **Airborne Dust on Air Ducts Sealed with Aeroseal**

### **Introduction**

Duct sealed with the Aeroseal duct sealant comply with standard EN15780 for the cleanliness standards for new ductwork.

Aeroseal ducts show only a slight increase in dust accumulation compared with unsealed ducts.

### **Methodology and Testing**

Four identical sections of ductwork were fabricated from 24-gauge (0.70mm) galvanized metal to the following specifications: 24"W x 24"H x 8'L (61cm W x 61cm H x 2.44m L) with (1) transverse slip and drive connection at the midpoint, (1) end cap with 10" (25cm) dia. relief hole, (1) end cap with 14" (35.6 cm) round collar connection for connection to the Aeroseal machine. Ducts were labeled as follows:

- Duct 1: Unsealed, 30g x 3 duct load
- Duct 2: Aeroseal, 30g x 3 dust load
- Duct 3: Aeroseal, 60g x 3 dust load

Following fabrication, a static leakage measurement was taken on all 3 samples at CFM25 prior to any sealing or testing. One sample was left unsealed as a control. Two samples of ductwork were sealed using the Aeroseal process. A post-seal static pressure leakage test was performed on the sealed test ducts at CFM25 and the sealant was allowed to cure for a minimum of 4 hours. The attached exhibit shows the Certificate of Completion for the 2 sealed sections

All the duct sections were transported to an independent laboratory certified to complete air filter arrestance testing per ASHRAE 52.1 standards. Using the method of test outlined in ASHRAE 52.1, ASHRAE Test Dust #2 was introduced into samples. This dusting procedure was performed a total of three (3) times. To simulate moderate duct cleanliness, Ducts 1 and 2 had 30g of dust introduced into the sample 3 times for a total of 90g each. To simulate poor duct cleanliness, Duct 3 had 60g of dust introduced into the sample 3 times for a total of 180g.

The cleanliness of all 3 samples was measured per the VDI6022 standard. Samples were obtained in

4 locations of each sample duct: front bottom of duct, front side of duct, rear bottom of duct, rear top of duct. Each sample was a circle with a diameter of 100 cm<sup>2</sup>. The samples were collected and weighed using a Wohler DTEST testing apparatus. Acetone was used as the solvent. See exhibit B

## Results

Sample	Description	Wipe Location	Wipe Tare Weight (grams)	Wipe Loaded Weight (grams)	Difference	Avg. Gain
1	<b>Unsealed, 30g x 3 dust load</b>	1	6.080	6.080	0.000	0.008
		2	6.032	6.039	0.007	
		3	6.025	6.039	0.014	
		4	6.053	6.065	0.012	
2	<b>Aeroseal, 30g x 3 dust load</b>	1	5.883	5.917	0.034	0.020
		2	6.018	6.019	0.001	
		3	6.018	6.056	0.038	
		4	5.954	5.959	0.005	
3	<b>Aeroseal, 60g x 3 dust load</b>	1	6.009	6.071	0.062	0.038
		2	6.002	6.012	0.010	
		3	6.036	6.105	0.069	
		4	6.026	6.036	0.010	

### Location Key

1 = front, bottom of duct

2 = front, left side of duct

3 = back, bottom of duct

4 = back, Left side of duct

All wipe locations taken approx. 16" from end of duct to center of 100 cm<sup>2</sup> DTEST ring

## Conclusion

1. No location of the Aeroseal sealed duct exceeded the EN15780 maximum initial cleanliness recommendation of 4 g per sqmeter, even after an additional 90g of dust was added to the sealed duct.
2. The Aeroseal duct had an average of 0.012 g more of dust and sealant accumulation compared to a similar unsealed duct.

**Exhibit A**  
**Certificates of Complete for Ducts 2 and 3**

**Exhibit B**  
**Images of Duct Cleanliness Sampling per VDI6022**

