Vented Clothes Dryer Case Study

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Summary

VanAir collaborated with RDH Building Science to confirm that VanAir Doors are a viable and effective solution for providing vented clothes dryers installed in laundry closets with sufficient air transfer. In the laboratory, two doors were tested in a purpose-built test closet with temperature and humidity sensors. The test enclosure and methodology were in general conformance with UL 2158 *Standard for Safety for Electric Clothes Dryers*[1].

Test doors	
2 Door Grilles (installed top/bottom, each 6x10")	
VanAir Door	
Note: sides, top, and ½" undercut were unsealed for all test doors	
Test dryer	**Required Vent**
GE 24" Vented PCVH480EKWW	60 in^2

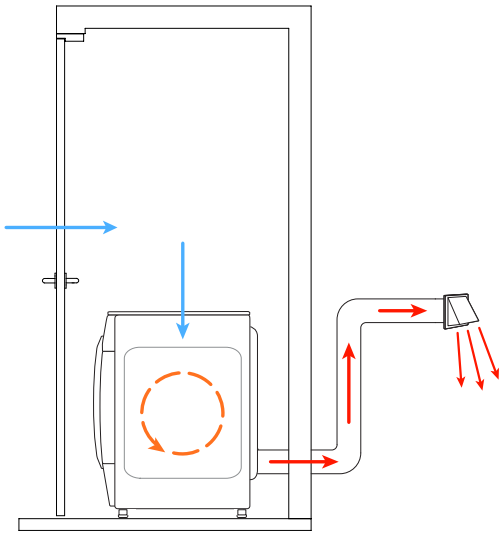

Figure 1 - Schematic of Airflow through a Vented Dryer and Laundry Closet

Laundry Closet Ventilation

Conventional vented clothes dryers use heated air to extract moisture from a load, and the resulting hot and humid air is exhausted outside. Accordingly, vented dryers require a supply of air, and provisions for ventilation must be made when they are placed in enclosures like a laundry closet. Appliance manufacturers and the International Mechanical Code[2] require ventilation openings in laundry closets.

Highlighted Results

'The results of this testing show that both the use of the VanAir Standard and VanAir Sound Option doors as laundry closet doors results in similar performance to that of a hollow core door with grilles as specified by the manufacturer for a vented dryer based on measured drying efficacy as well as temperature and humidity accumulation within the laundry closet.'[3]

- Temperature and humidity through the cycle duration were practically equivalent for both test doors.
- Moisture extracted from the test load was practically equivalent for both test doors.
- Airflow measured at the exhaust hood was practically equivalent for both test doors as well as for an open closet door – this indicates that both the VanAir Door and 2 Door Grilles result in negligible restriction to the makeup airflow and do not impede the vented dryer's operation.

Testing Completed by:

RDH BUILDING SCIENCE LABORATORIES

[1] *Underwriters Laboratory Inc., Canadian Standards Association, "UL-2158 (CSA C22.2 No. 112-18) – Standard for Safety for Electric Clothes Dryers," ANSI/UL/CSA (2018)*

[2] *International Code Council, "International Mechanical Code," 504.6 Clothes Dryer Makeup Air, ICC (2018)*

[3] *L. Ricketts, M. Lisi, J Tatara, "Testing of VanAir Doors for Laundry Closet Applications with Vented Dryers," RDH Building Science, Burnaby, British Columbia (2020)*
** full report available upon request*

Test Results

Performance metrics:

- Relative humidity, temperature, and dew point in the test closet over an 80-minute cycle.
- Mass of water extracted from the test load.
- Airflow rate through the dryer.

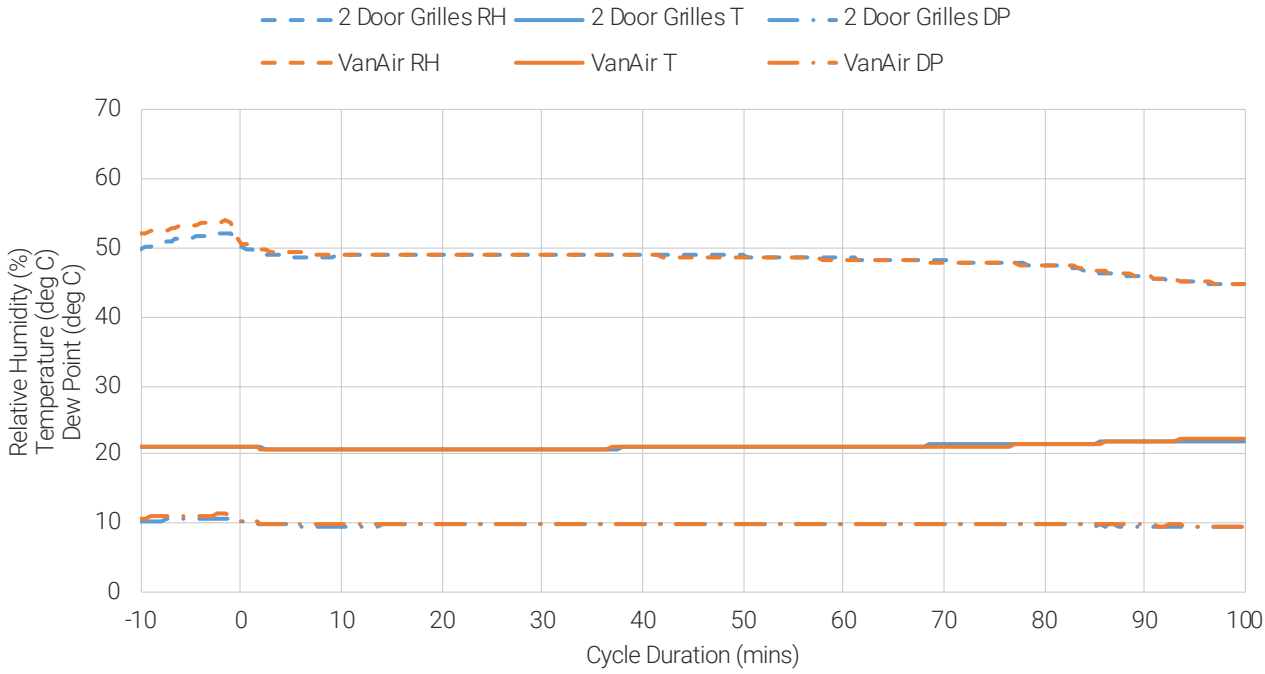

Figure 2 - GE Vented Dryer: Relative Humidity, Temperature, and Dew Point in the Test Closet over an 80min Cycle

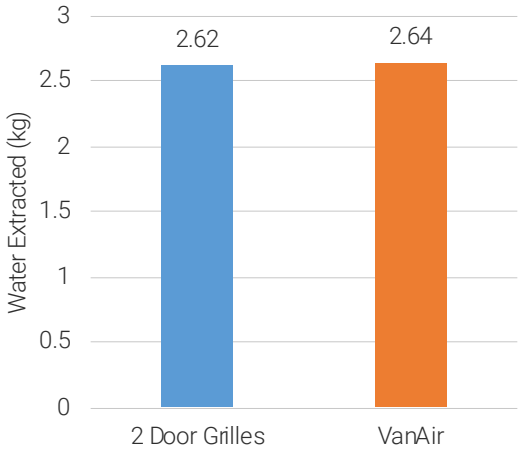

Figure 3 - Water Extracted from Standardized Test Load (kg)

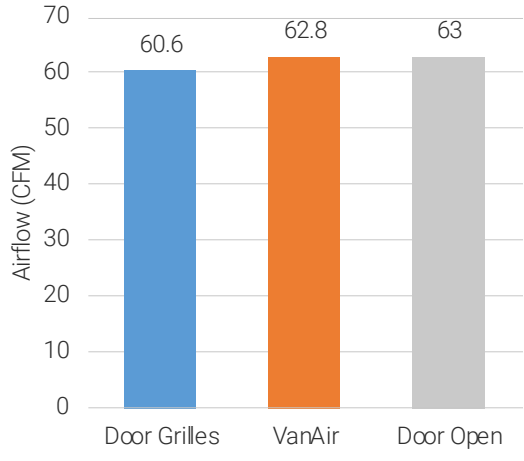

Figure 4 - Airflow Measured at Exhaust Hood (CFM)

Test Closet

Interior dimensions:
31½" (width) x 37 ½" (depth) x 82 ¼" (height)

Figure 5 Test Closet, VanAir Door

Figure 6 - Test Closet, 2 Door Grilles

Figure 7 - Flow Hood Measuring Airflow at Dryer Exhaust

Door samples generously provided by:

Lynden Door

Appliances generously provided by:

Trail Appliances

Testing completed by:

RDH BUILDING SCIENCE LABORATORIES