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# PERFORMANCE REPORT

**ARL Lab Number:**  
**50175**

**Client:**  
**In-O-Vate Technologies Inc.**  
**810 Saturn St.**  
**Jupiter, FL 33477**

**Test Method:**  
**Miami-Dade County Protocol TAS 114, Appendix E (1995)**

**Product:**  
**Dryer Vent**

**L/N 50175 In-O-Vate Technologies Inc. Sample ID: 16-0358 Issued 06/23/16 Page 1 of 17**



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**Products:** Dryer Vent

## REPORT OF TEST

### 1 INTRODUCTION

- 1.1 In-O-Vate Technologies Inc. of Jupiter, FL, retained Applied Research Laboratories (ARL) to conduct a performance testing according to Miami-Dade County Protocol TAS 114, Appendix E, Test Procedure for Corrosion Resistance of Fasteners, Batten Bars and Stress Distribution Plates, on samples of Nails and Tin Tabs.
- 1.2 A performance test was performed by ARL Engineer Greg Woyczynski from Wednesday, April 14, 2016, thru Wednesday, June 22, 2016.
- 1.3 The testing program was authorized by an ARL Work Authorization Form (Form WAF-00) received from Mr. James Ortiz, VP of Operations, of In-O-Vate Technologies Inc., on Monday April 4, 2016.

### 2 PRODUCT DESCRIPTION

- 2.1 Single sample of dryer vent was supplied by the client.
- 2.2 The purpose of the vent is to terminate the exhaust duct of a clothes dryer.



2.3 The following dryer vent was provided:

- a. SKU #DWV4W: 6.5"x6.5" Galv. Steel, Dryer Wall Vent  
Manufacturer: In-O-Vate Technologies Inc.  
Manufacturer Address: 810 Saturn St.  
Jupiter, FL 33477



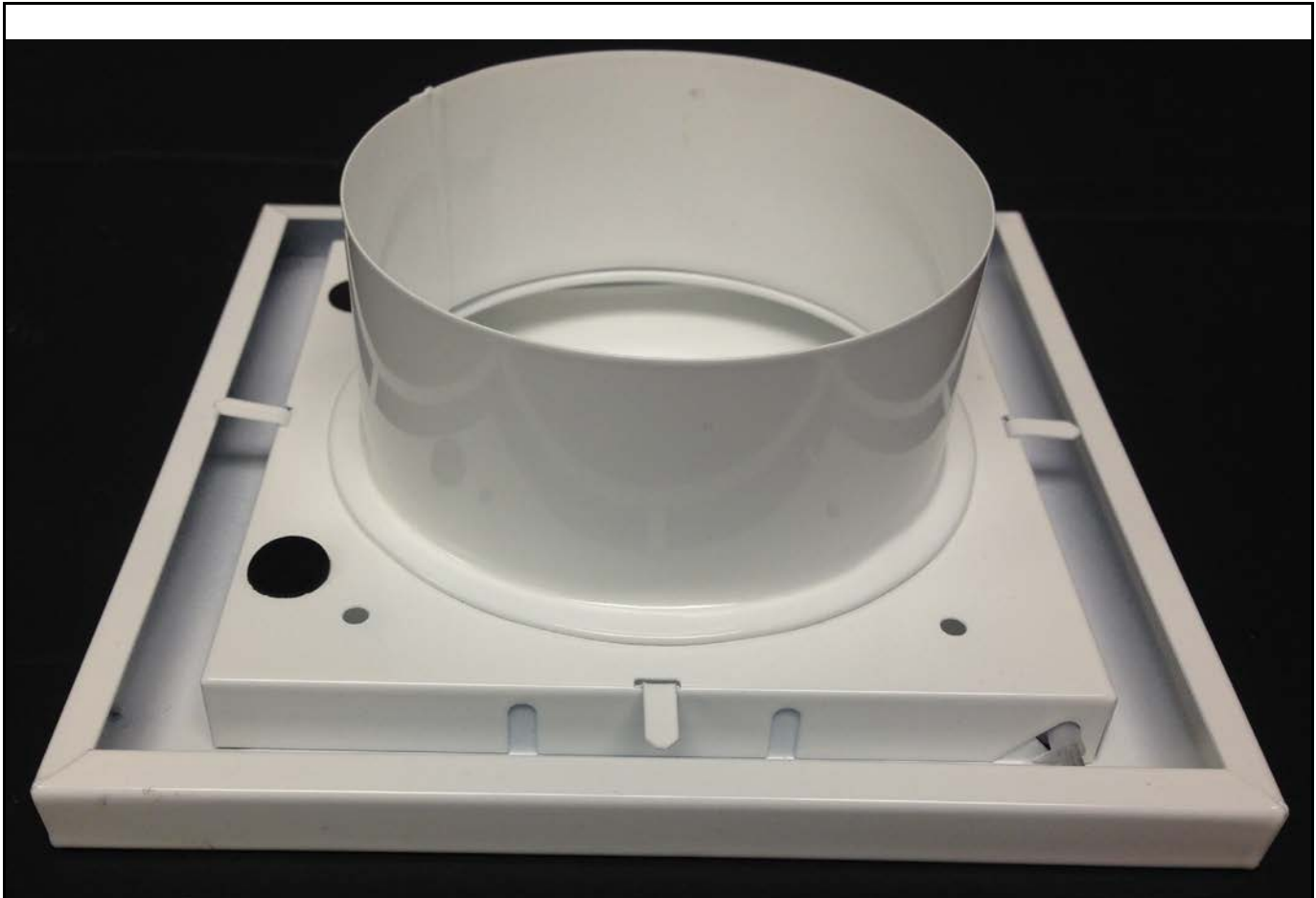
2.4 Photographs of the untested specimen are shown below.



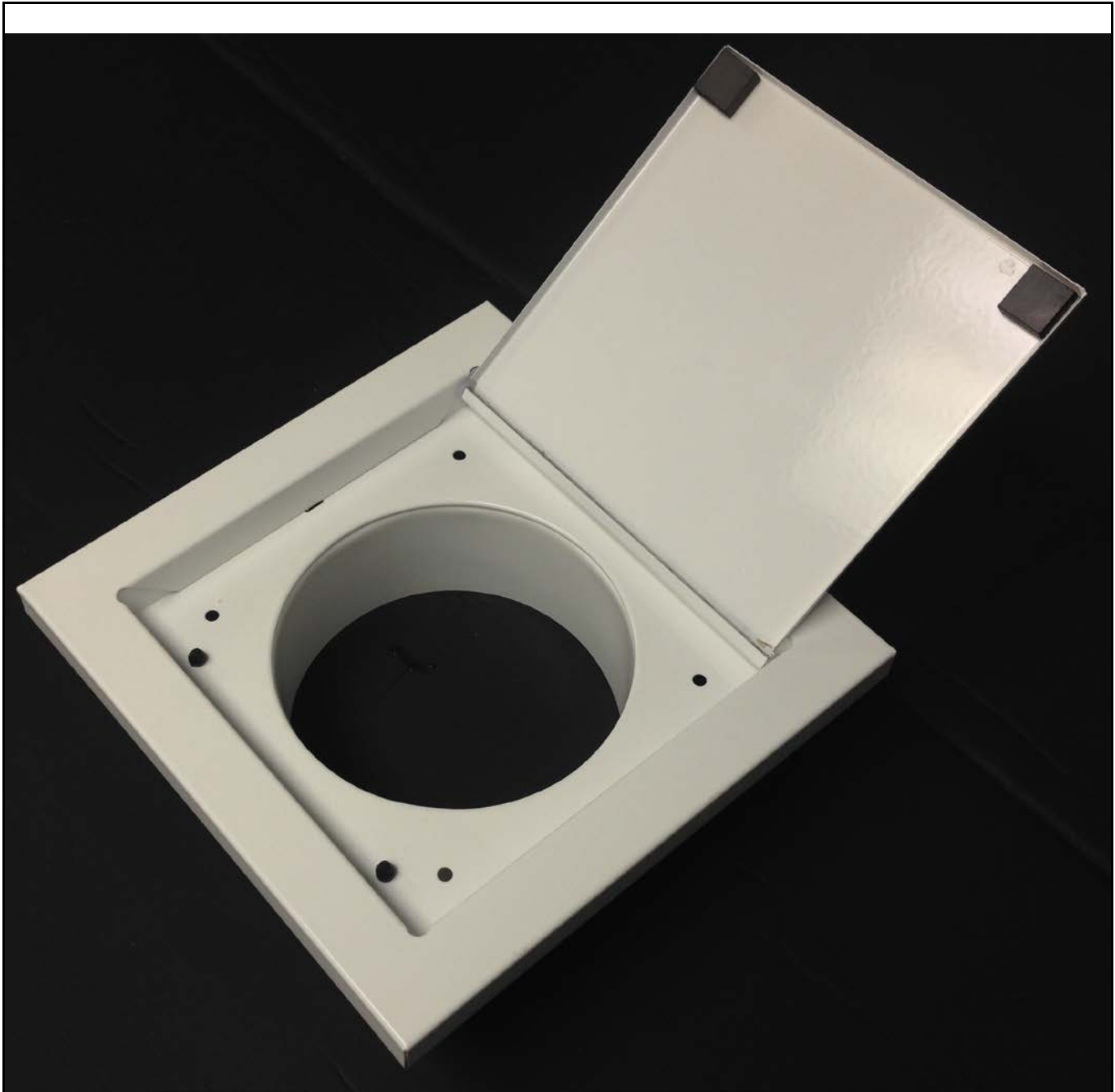
**Photograph 1  
Before**



**Photograph 2**  
**Before**



**Photograph 3**  
**Before**



**Photograph 4  
Before**

### 3 TEST METHOD

- 3.1 Cyclic Corrosion Test Chamber – The ARL Cyclic Corrosion Test Chamber was utilized to accommodate the parameters of TAS 114, Appendix E, for the purpose of testing the dryer vent. The Chamber, Model CCT10-MB-8AD, was manufactured by Singleton Corporation. The sample space volume is 21 ft<sup>3</sup>. The inside dimensions are 48 x 33 x 24 inches. The Chamber has a temperature range of ambient - 140°F and a humidity range of ambient - 100%.



**Photograph 5**  
**Cyclic Corrosion Test Chamber**





**Photograph 6**  
**Cyclic Corrosion Test Chamber**

- 3.2 For this test the Chamber must expose the Test Samples to 500 cycles consisting of one (1) hour of spray and one (1) hour of drying. Each cycle is two (2) hours. Total test time is 1000 hours (approximately 41 days, 16 hours).
- 3.3 For the spray cycle, the temperature inside the chamber was maintained at  $75 \pm 6^{\circ}\text{F}$ . The fogging was achieved by using a single nozzle connected to an air supply. The solution was drawn out of the main reservoir to a secondary reservoir inside the sample space and then atomized by the nozzle and released into the chamber, thus exposing the dryer vent to the salt fog.
- 3.4 During the drying cycle, the temperature inside the chamber was maintained at  $95 \pm 3^{\circ}\text{F}$ . The Chamber is capable of reaching the required temperature within 45 minutes as required by TAS 114, Appendix E. The drying was aided by evacuating the chamber of all sprayed solution and then beginning the heating process. The evacuation lasts approximately 5 minutes. All visible moisture was removed from the samples. Heating is accomplished by two (2) heater elements located in the bottom of the Chamber.



3.5 Solution – The solution used in the testing was an electrolyte solution containing 0.05% sodium chloride and 0.35% ammonium sulphate by mass. The pH of the solution was between 5.0 and 5.4. The salinity was 0.05%. Water used to manufacture the solution conformed to ASTM G85-11, Section 6 and was substantially free of nickel and copper and did not contain, on a dry basis, more than 0.1% sodium iodide and not more than 0.3% total impurities. ARL obtained the solution from National Exposure Testing, Inc., of Sylvania, OH, which has the above solution available and labelled as “Certified Dade County Salt Spray Solution.” A certificate of conformance was furnished with the solution. The lot number of the solution used is DE040716.2, manufactured on 4/7/16. The Certificate of Compliance provided by the solution manufacturer is maintained at ARL.

3.6 Temperature – The Chamber monitored and adjusted all temperatures automatically to pre-programmed values.

3.7 Quantity of Fog – The quantity of fog was controlled by adjusting the position of the spray nozzle.

#### 4 TEST PROCEDURE

4.1 Before samples were mounted in the Chamber, the collection rate of the Chamber was determined. Two (2) glass, 100mL graduated cylinders, each fitted with a polymeric funnel having an area of 80 cm<sup>2</sup> mounted in a rubber stopper, were placed in the Chamber and positioned according to ASTM G85-11, Section 4.3.2, with one cylinder as near as possible to the nozzle and one as far as possible from the nozzle, and the chamber manufacturer’s instructions. The chamber manufacturer recommends that a cylinder not be within 10 cm of any wall or nozzle. Cylinder #1 was placed 10 cm from the nozzle in the 7 o’clock position from the nozzle. Cylinder #2 was placed 10 cm from the far wall in the 2 o’clock position from the nozzle.

4.2 The Chamber was programmed to produce a continuous spray for 16 hours with a samples space temperature of 75°F. After 16 hours, the collected solution was measured and the collection rate calculated. The collection rate was calculated to be 1.813 mL/hr for Cylinder #1 and 1.625 mL/hr for Cylinder #2. TAS 114, Appendix E specifies a collection rate between 1-2 mL/hr.

4.3 One (1) test samples was chosen by the client. The sample was placed in the Chamber.

4.4 The Chamber was then programmed for the TAS 114, Appendix E test. The sample underwent 500 cycles of testing. The samples were then removed from the chamber and cleaned using deionized water.

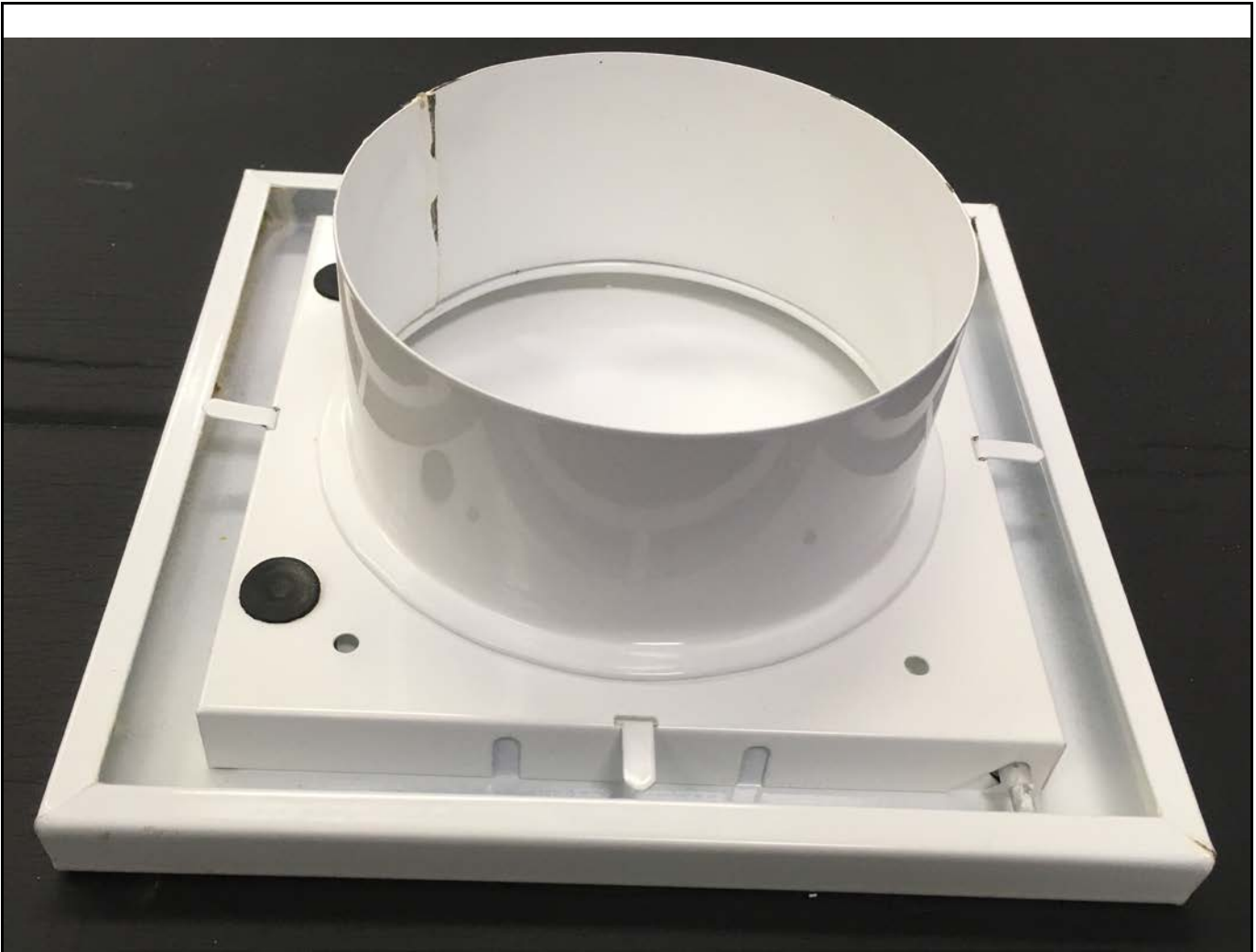
**5 AFTER EXPOSURE PHOTOGRAPHS**



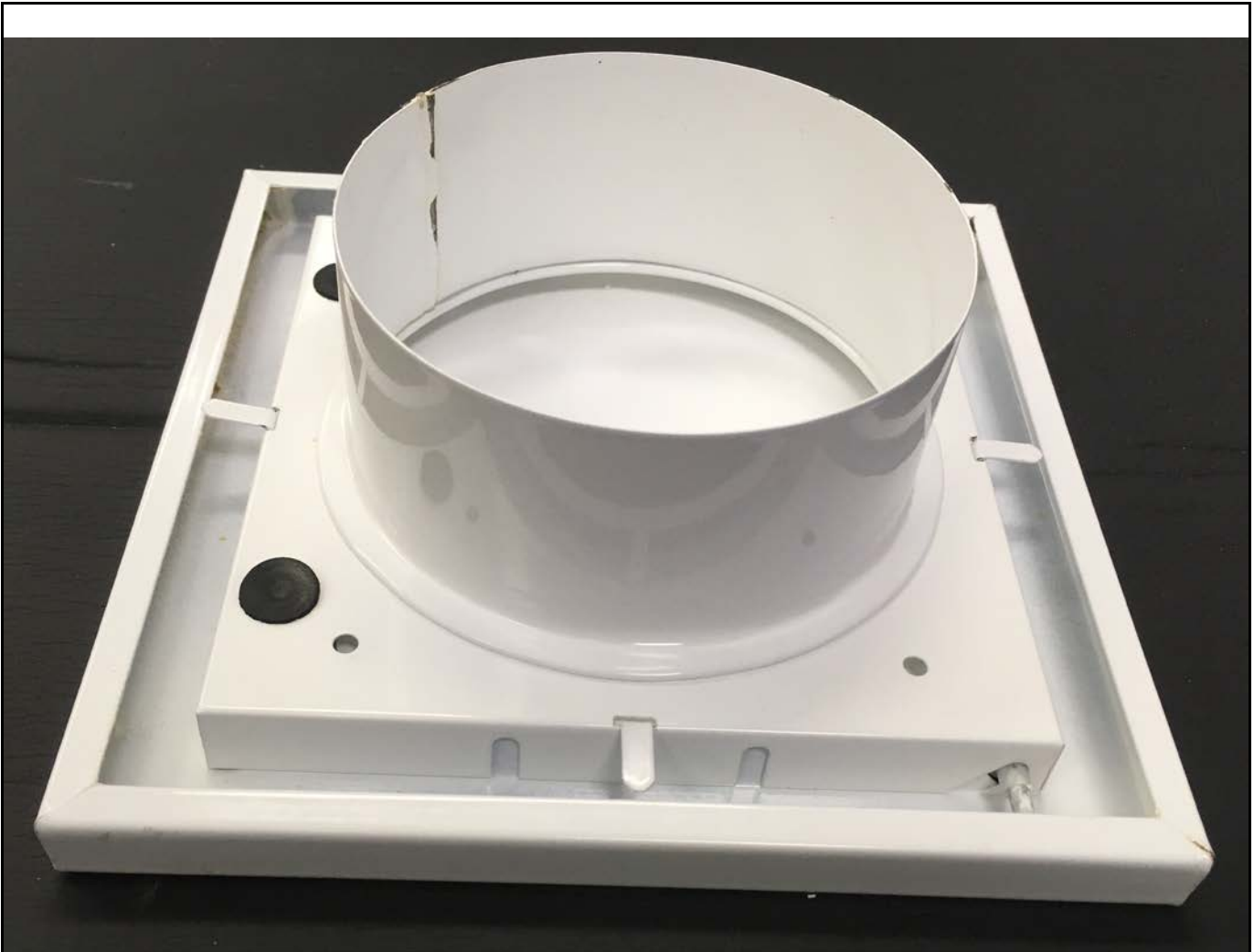
**Photograph 7  
After**



**Photograph 8**  
**After**

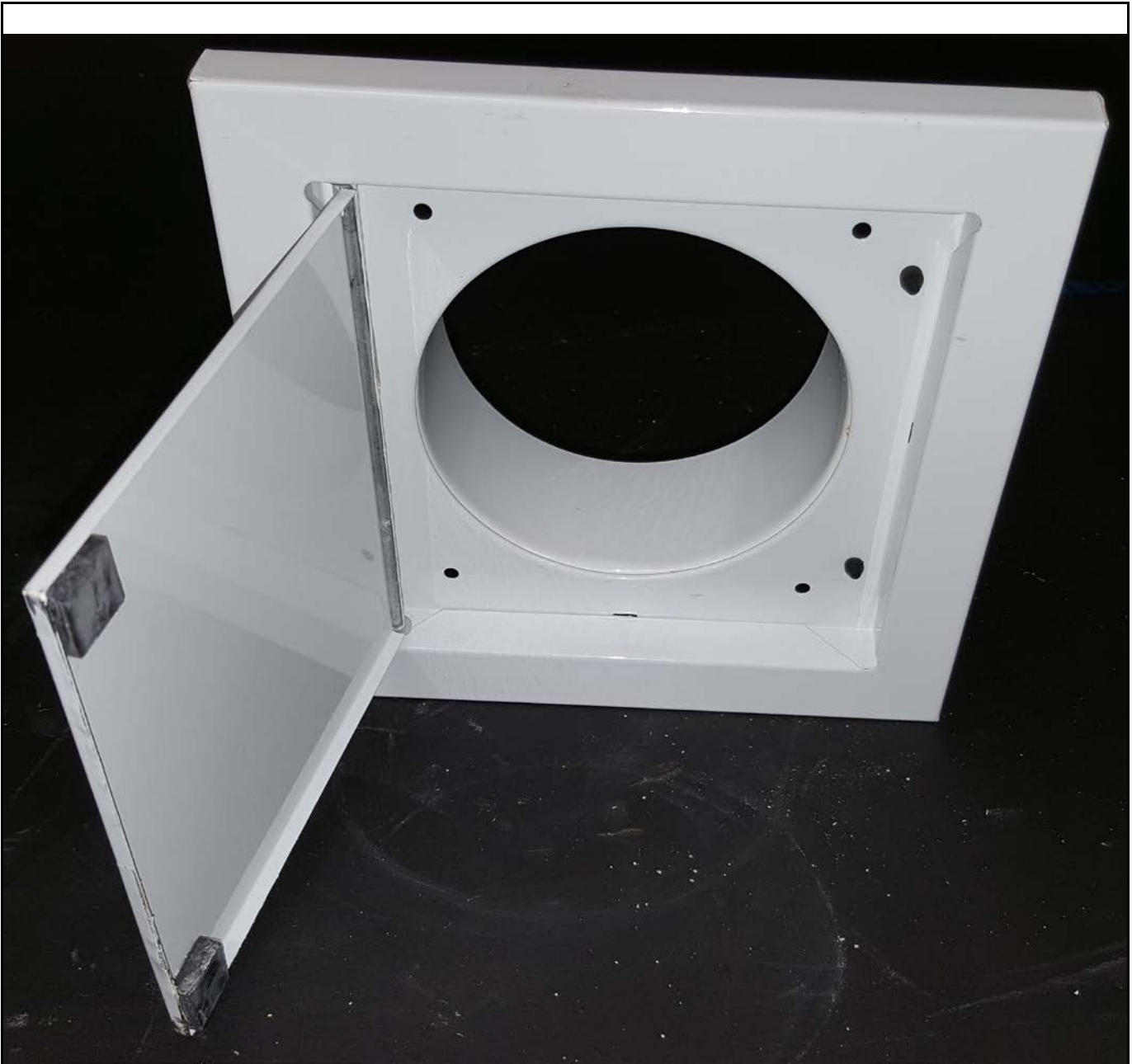


**Photograph 8**  
**After**



**Photograph 9**  
**After**





**Photograph 10**  
**After**

**6 CONCLUSION**

- 6.1 An objective visual examination was conducted on each specimen according to the guidelines of TAS 114, Appendix E, Section 2.6.1.1.
- 6.2 The acceptance criteria is defined as any test specimen that exhibits corrosion on an area in excess of 5% of its total surface area shall be considered as failing this test.
- 6.3 Based on the acceptance criteria the following conclusions were made:

Product	Status
SKU #DWV4W: 6.5"x6.5" Galv. Steel, Dryer Wall Vent	PASS

**7 EQUIPMENT**

7.1

Equipment Used	ARL ID #	Calibration Due Date
Cyclic Corrosion Test Chamber	1967	7/26/16
Tape Measure	2051	5/26/18
100mL Graduated Cylinder	2020	5/16/17
100mL Graduated Cylinder	2021	5/16/17

**8 REMARKS**

- 8.1 These test results pertain only to the specimens tested and may not be representative of on-going production.
- 8.2 Tested values obtained represent actual results of tested specimens and do not constitute opinion, certification or endorsement.
- 8.3 These products are not covered by the ARL Listing, Labelling and Follow-up Service Program and are not considered to be ARL Listed.





## END OF REPORT

Report by:

Reviewed by:

\_\_\_\_\_  
Greg Woyczynski  
Test Engineer

\_\_\_\_\_  
E. John Lanager  
Technical Manager

Date: \_\_\_\_\_

Date: \_\_\_\_\_