File R6799

Project 05NK19823

January 12, 2006

REPORT

on

LEAKAGE RATED DOOR ASSEMBLIES (OPBW)

Won-Door Corporation
Salt Lake City, UT

GENERAL

This investigation was initiated for the sole purpose of determining the amount of resistance to air leakage a special purpose type door assembly has in the closed position under a standard air leakage test.

The object of this investigation was to determine the rate of air leakage (expressed in cubic feet per minute, per square foot) through a door opening in the as-installed condition by means of air leakage and cycling tests conducted in accordance with the Standard, "Air Leakage Tests of Door Assemblies," UL 1784, NFPA 105 (2003) and UBC 7-2, Part II (1997).

USE:

Leakage rated door assemblies are intended for installation in accordance with the Standard for the Installation of Smoke Door Assemblies, NFPA 105.

TEST RECORD NO. 1

The test results relate only to the items tested.

EXAMINATION OF MATERIAL:

The Won-Door Type Fireguard, automatic (motorized) or manually sliding, folding special purpose type fire door assembly used in this investigation was produced using the manufacturers current standard production and was provided to Underwriters Laboratories Inc. in a ready-to-use form.

TEST SAMPLES:

The test assembly consisted of the two-piece door, motor, operating components and upper track assembly installed in an opening constructed within a steel stud and gypsum wallboard wall and header constructed in accordance with the manufacturer's installation instructions. The wall incorporated a pocket to hide the door when in the fully open position as recommended by the manufacturer. The wall assembly was mounted to the exterior face of the Laboratories air leakage test chamber.

The construction and wall opening size of the test assembly was the maximum size allowable due to the size of the air leakage test chamber. The size tested was considered representative of that for which Classification was desired.

CONSTRUCTION DETAILS:

DOORS

The sliding folding door assembly was designed for a nominal opening 143-3/4 in. in width and 120 in. in height.

The sliding door utilized was the manufacturer's presently UL Classified, Fireguard sliding type, accordion folding door. The door incorporated the rubber floating jambs, rubber top and bottom seals and lead edge rubber seals. The operating components and motor were the same as presently Classified. The strike jamb of the wall opening was formed to accept the recessed steel striker.

TRACK ASSEMBLY

The steel track utilized was the manufacturer's standard track for the mounting and suspension of the door.

HARDWARE

The sliding door incorporated the manufacturer's standard motorized operating components that held the door in the fully closed position.

The top of the sliding door was provided with the manufacturer's standard sliding door hardware (trolley, rollers, etc.) as currently described in the Follow-Up Service Procedure for File R6799.

INSTALLATION:

The control box, motor drive unit, track components and recessed striker piece were secured to the gypsum wall using steel screws in accordance with the manufacturer's installation instruction.

After installation, the sliding door was adjusted to allow free and easy movement of the door assembly, per the instructions.

The sliding accordion folding door assembly was mounted so as to close from left to right across the front of the air leakage test chamber.

The illustrations showing the general appearance of the assembly are shown in Figs. 1, 2 and 3.

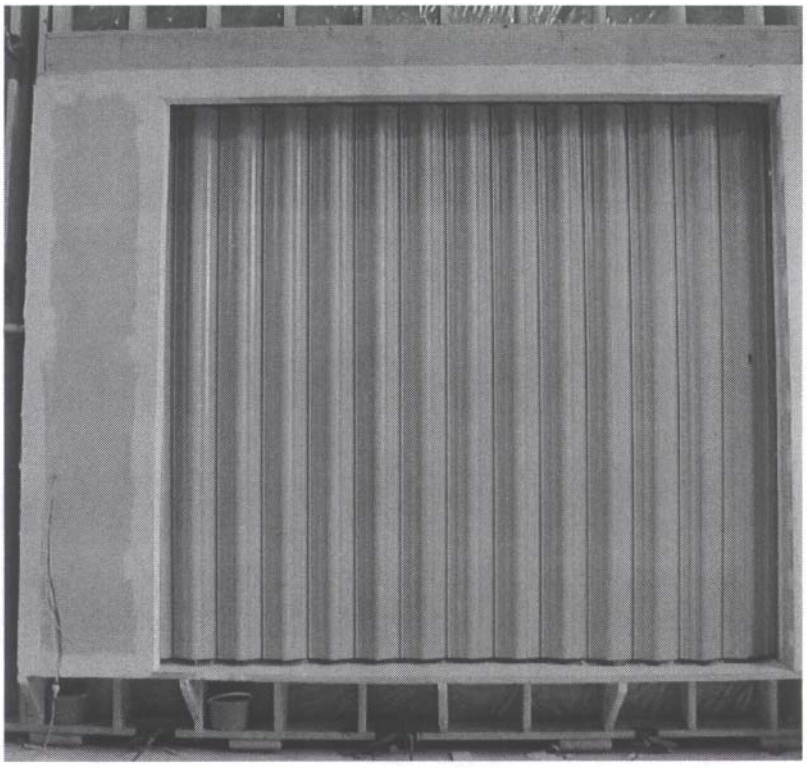

FIG. 1

Fig. 2

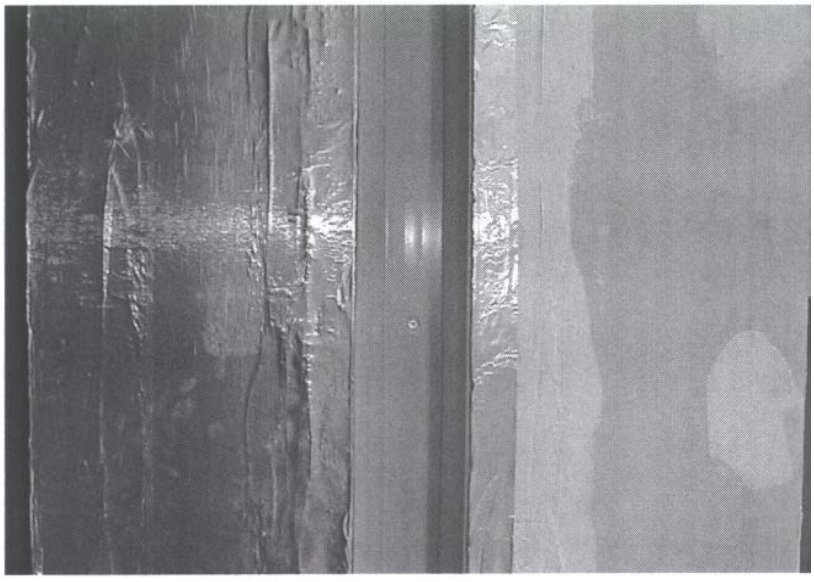

Fig. 3

OPERATIONAL CLOSING TEST:

METHOD

Prior to the air leakage test, the sliding, folding door assembly was subjected to a closing test to determine its ability to fully close when the control panel box receives a remote signal or manual activation (via a wired remote control device).

Based upon the design of the door and track assembly, the motor and chain drive move the door toward the closed position until stopped by the touch switch in the lead edge of the door panel. The chain drive then holds the door in the fully closed position. The door was cycled from the fully open to fully closed position for a total of five cycles.

RESULTS

The door assembly closed and opened as intended during each test cycle.

AIR LEAKAGE TESTS:

METHOD

Throughout the air leakage tests, various test installations were evaluated and the air movement through the assembly was recorded. Leakage tests were conducted at ambient and elevated (400°F) conditions in accordance with the Standard. Since the assembly was symmetrical in design, the assembly was only tested from one direction.

RESULTS

Test No. 1

Description - As-Installed, With Bottom of Door Panel Sections Taped

Rate of Air Leakage, cfm/ft^2

Condition	**0.050 in.** H_20	0.100 in. H_20	0.200 in. H_20	0.300 in. H_20
Ambient	0.449	0.795	1.161	1.614
Elevated	0.768	1.355	2.198	2.957

Description - As-Installed, With Bottom of Door Panel Sections Taped (Post-Test, After an Elevated Temperature Test)

Rate of Air Leakage, cfm/ft^2

Condition	0.050 **in.** H_2O	**0.100 in.** H_2O	0.200 **in.** H_2O	0.300 **in.** H_2O
Ambient	1.237	1.631	2.722	3.591

Test No. 2

Description - As-installed, Door Panel Sections had standard Top and Bottom Seals, Floating Jamb Seal, Anti-Sway Brackets {between panel layers at centerline of door}, Foil Backed Insulation {taped to the inside of the inner and outer panel layer at the top and bottom edges), Panel and Top Track Seals.

Rate of Air Leakage, cfm/ft^2

Condition	0.050 in. H_20	0.100 in. H_20	0.200 in. H_20	0.300 in. H_20
Ambient	1.46	2.90	*	*
Elevated	0.93	2.04	*	*

CONCLUSION

The following conclusions represent the judgment of Underwriters Laboratories Inc., based upon the results of the examination and tests contained in this Report as they relate to established principles and previously recorded data.

AIR LEAKAGE RATING PROPERTIES:

The sliding, folding, special purpose type fire door and track assembly and the test conditions described in this Report were subjected to tests at ambient and elevated temperatures to determine the air leakage rating as specified in the Standard NFPA 105. The leakage ratings established for the test sample and tested conditions are shown in the Test Record contained within this Report.

CLASSIFICATION AND FOLLOW-UP SERVICE:

The products as described herein are judged to be eligible for Classification and Follow-Up Service of Underwriters Laboratories Inc. Under the Service the manufacturer is authorized to use the UL Classification Marking on the door assembly when the door assembly complies with the Follow-Up Service Procedures and any other applicable requirements of Underwriters Laboratories Inc. Only those door assemblies that properly bear the UL Classification Marking are considered as Classified by Underwriters Laboratories Inc.

The Classification Marking reading: Underwriters Laboratories Inc., Classified, "Leakage Rated Assembly", As To Leakage Resistance, See Installation Instructions For Specific Leakage Rate, will cover the size, design, and construction of the door and frame assembly.

Installation instructions indicating the proper method of installation and specific air leakage ratings shall be attached to, or packaged with each product or assembly.

Leakage rated door assemblies are intended for installation in accordance with the National Fire Protection Association Standard for the Installation of Smoke Door Assemblies, NFPA 105.

Report by:

SCOTT EBLING
Senior Engineering Associate
Fire Protection Division

Reviewed by:

MATTHEW SCHUMANN
Senior Project Engineer
Fire Protection Division