

# ***RUSKIN***

Only mother nature can  
stop the rain better than Ruskin.



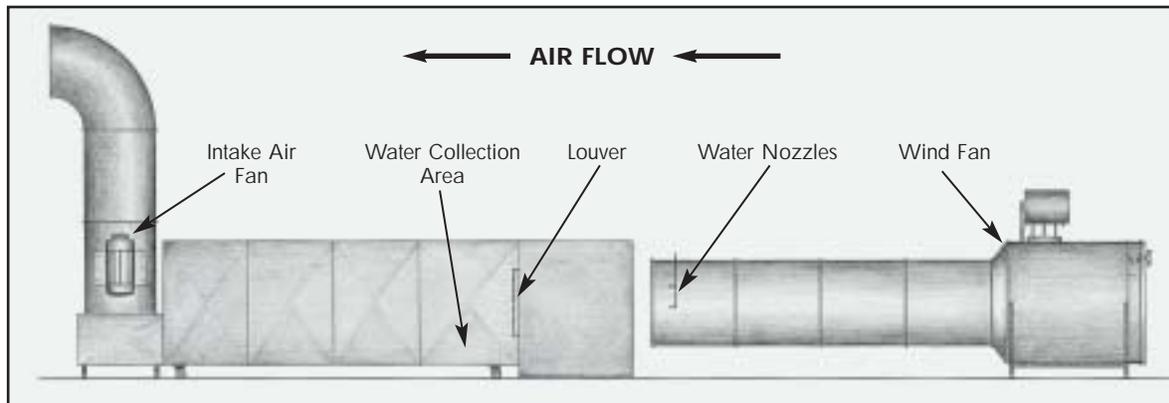
*Ruskin's Wind Driven*

*Rain Resistant Louvers*

*Specified by Many – Equaled by None*

# A new generation of louver design.

*Ruskin's Wind Driven Rain Resistant Louvers are raising the level of performance available today.*



## Why Ruskin Wind Driven Rain Louvers?

Two reasons; performance and cost. By virtue of their special blade and frame designs, these louvers provide more protection against wind blown rain penetration than standard horizontal-blade wall louvers. For many years, the design of louvers has been largely influenced by the AMCA Standard 500 Water Penetration test. This test is essentially a "still air" test where the airflow is drawn through the louver from the rear while water is dropped in front of the blades. The maximum airflow drawn through the free area of the louver is 1,250 fpm and no air is blown at the exterior to simulate wind. Performance is presented as the total weight of water that penetrates per square foot of louver free area at the test velocity. Test results have proven that louvers with wide blade spacing can be designed to perform well in the AMCA 500 test. These models are generally designed with blade and/or frame gutters on the exterior face to collect, direct and evacuate water.

Wide blade spacing, however, does not lend itself well to wind driven rain tests. The first widely recognized wind driven rain test for louvers utilized in the U.S. was the HEVAC test\*. HEVAC, a European trade organization, designed the test to simulate storm conditions by combining wind, system airflow and

water effects. Unlike the AMCA 500 test, simulated wind and rain is blown directly at the exterior of the louver. Louver performance is presented as an efficiency rating, which is the percentage of water that is collected by the louver that would penetrate a clear opening of similar size under the same conditions. Test results reveal that blades with sophisticated profiles and close center to center spacing offer the best performance under these conditions. Additionally, while gutters do help, the overall shape of the blade has the greatest effect on the performance.

Ruskin Wind Driven Rain Resistant Louvers are tested in a simulated HEVAC test that utilizes wind, system airflow and rain effects. Closely spaced blades with intricate profiles offer protection against wind driven rain not possible with standard wall louvers.

Ruskin Wind Driven Rain Resistant Louvers are also cost effective. The high performance provided by these models allows them to handle a significantly higher volume of airflow than standard louvers. This extra air capacity allows not only the louver to be downsized, but also accompanying components such as structural supports, blankoff panels, filters, sleeves, dampers and the quantity of damper actuators.

\*AMCA Standard 500-L will include a wind driven rain test procedure similar to the HEVAC test. This test will be included in the AMCA 511 Certified Ratings Program.

# Ruskin's EME Louvers put a stop to wind driven rain.

EME6625 LOUVER WIND DRIVEN WATER PENETRATION PERFORMANCE				
WIND VELOCITY mph (kph)	RAIN FALL RATE in./hr. (mm/hr.)	AIRFLOW THROUGH FREE AREA fpm (m/min)	PRESSURE DROP inches w.g. (kPa)	EFFECTIVENESS RATIO
40 (64)	3 (76)	2062 (628)	.30 (.07)	100%
50 (80)	6 (152)	2062 (628)	.30 (.07)	98%
75 (121)	3 (76)	1856 (566)	.21 (.05)	98%

Effectiveness ratio is the percentage of water applied to the louver that did not penetrate during the test duration.

## The performance leader

### EME6625

Ruskin's EME6625 Louver is proving to be the performance leader. At a 40 mph wind velocity and 3" per hour rain fall rate, it is 100% effective in preventing water penetration. With 40 mph wind and 6" per hour rainfall, the EME is 98% effective. This effectiveness rating holds up even when the wind velocity is elevated to 75 mph with 3" per hour rainfall.

In addition to its excellent water penetration characteristics, the EME offers a remarkably low pressure drop. At 1,500 fpm free area intake velocity, the louver creates approximately .15 inches w.g. pressure drop. This makes it one of the best models available for high intake velocity applications. The EME6625 can handle the same amount of air as a standard wall louver that is 30-40% larger. And, it does it with similar pressure drop characteristics and no measurable water penetration.



## The architectural alternative

### EME520DD

For applications where a traditional horizontal-blade appearance is desired, Ruskin offers the EME520DD Louver. This 5" deep model combines excellent wind driven rain performance with low pressure drop creating an aesthetically pleasing louver for applications with high airflow and/or high water penetration potential. Wind driven rain resistance efficiency is 99% when subjected to 29 mph wind and 3" per hour rainfall effects with 1,723 fpm free area intake airflow velocity. Pressure drop at this intake velocity is .41" w.g. A 4' x 4' unit provides 44% free area. Hidden vertical blade supports are available allowing the EME520DD to provide continuous blade appearance up to 10' in width.



## We hold up under pressure

Other louvers may crumble under the devastating effects of heavy wind and rain. Not Ruskin. Our Dade County Approved Louvers are designed to hold up under pressure and provide protection from the most severe weather conditions.

The Miami-Dade County Florida Building Code Compliance Office (BCCO) has developed a series of test protocols that subject products to the rigors of hurricane wind and rain conditions.

To gain Miami-Dade County approval, louvers may be required to pass as many as four different tests.

### **PA-100(A): Wind Driven Rain Penetration Test**

The BCCO requires this test if the room the louver is installed in is not designed to drain water and/or houses items that are not water resistant. This test subjects the louver to high velocity winds and heavy simulated rainfall. Using a wind generator and water jets that inject the equivalent to 8.8" per hour rainfall into the airstream, 15 minute tests are run at wind velocities of 35, 70, and 90 mph. The final 110 mph test is performed for 5 minutes. The louver must allow no water penetration at 35 and 70 mph, and only .05% penetration at 90 and 110 mph.

### **PA-202: Uniform Static Air Pressure Test**

If a louver is installed in a room that can drain water and houses water resistant items, then the PA-202 test is performed. In this procedure, the louver is installed in a chamber and uniform static air pressure is applied in positive and negative directions. Several pressure levels are applied in increasing magnitude until a load equal to 1.5 times the design windload is attained. Pressures are sustained for 30 seconds. The deflection of blades, frames and supports is measured during the test and the amount of recovery is checked afterwards. Throughout the test the anchorage system is also monitored for failure.

If the room is considered a closed structure that cannot withstand the pressure or if it houses equipment that cannot handle the pressure, the BCCO code requires the louver assembly be subjected to the PA-201 and PA-203 tests.

### **PA-201: Large Missile Impact Test**

This test simulates wind-driven debris that is often present in hurricanes. In the test, the louver assembly is impacted with a 2" x 4" board weighing 9 lbs. and traveling at approximately 34 mph. At least three separate impacts are conducted and the louver must prevent the board from both penetrating the assembly or creating a significant opening.

### **PA-203: Cyclic Wind Pressure**

This test is conducted only after the Missile Impact Test has been done. By simulating the forces applied to a louver by repeated severe wind gusts, this test exposes possible weaknesses in the assembly created by the missile impacts. In this test, the louver assembly is installed in a chamber similar to the Uniform Pressure test. However, the

pressures are applied for only a few seconds and repeated several hundred times. Pressure is increased until 1.3 times the design windload is achieved. As in the PA-202 procedure, the deflection of the components and the anchorage system are examined.

### **Ruskin's the First to be Miami-Dade County Approved**

Ruskin is the first manufacturer to gain Miami-Dade County approval for louvers. Both the ELF6375DXD Louver and the ELF6375DXD/CD102 Louver/Control Damper combination have been assigned the Miami-Dade County, Florida Notice of Acceptance Number 97-1023.04. Available in sizes up to 156" x 96".

The ELF6375DXD louver has been approved for use in open structures that are designed to drain water. Maximum design wind load is  $\pm 138$  psf.

The ELF6375DXD/CD102 combination louver/ damper assembly features an industrial control damper mounted behind the louver in a common sleeve. This assembly has been approved for use in closed structures that are designed to drain water. Maximum design wind load is  $\pm 148$  psf.

In addition to the models above, Ruskin has also gained approval for two other products; the EME6625D Wind Driven Rain Louver and the EME6625D/CD50 Louver/Control Damper combination. The Acceptance Number for both products is 98-0127.03 and both are available in sizes unlimited in width x 96" high.

The EME6625D Louver has passed the PA-100(A) Wind Driven Rain Test and is approved for use in open structure applications up to 33' above ground level that can accept no water penetration. Provisions for water drainage are required for applications above 33'. Maximum wind load is +160, -140 psf.

The EME6625D/CD50 combination louver/damper features an extruded airfoil control damper mounted behind the louver in a common sleeve. This combination has passed all of the Miami-Dade tests and is approved for any application up to 33' above ground level and any applications above 33' with water drainage provisions. Maximum wind load is +160, -140 psf.

For more information about Ruskin's Hurricane Louvers, or to speak with a Ruskin representative about your needs, visit us on the Internet or call (816) 761-7476.

# **RUSKIN®**

**DAMPERS AND LOUVERS**  
*Specified by Many – Equaled by None*

[www.ruskin.com](http://www.ruskin.com)

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