# ANSI/AMCA Standard 550-09

## Test Method for High Velocity Wind Driven Rain Resistant Louvers

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AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC.

The International Authority on Air System Components

# Test Method for High Velocity Wind Driven Rain Resistant Louvers

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**Authority**

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**Related Publications**

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| ANSI/AMCA Standard 500-L | *Laboratory Methods of Testing Louvers for Rating* |
| AMCA Publication 501 | *Application Manual for Louvers* |
| AMCA Publication 511 | *Certified Ratings Program - Product Rating Manual for Air Control Devices* |
| AMCA Publication 512 | *AMCA Listing Label Program* |
| ANSI/AMCA Standard 540 | *Test Method for Louvers Impacted by Wind Borne Debris* |

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# Test Method for High Velocity Wind Driven Rain Resistant Louvers

## 1. Purpose

This standard establishes uniform laboratory test methods and minimum performance ratings for water rejection capabilities of louvers intended to be used in high velocity wind conditions.

## 2. Scope

Tests conducted in accordance with the requirements of this standard are intended to demonstrate the acceptability of the louver for installation in facilities (essential and non-essential) that will remain in operation during a high velocity wind condition and where water infiltration must be kept to manageable amounts.

## 3. Units of Measurement

### 3.1 System of units

SI units (The International System of Units, Le Systéme International d'Unités) [1] are the primary units employed in this standard, with I-P units (Inch-Pound) given as the secondary reference. SI units are based on the fundamental values of the International Bureau of Weights and Measures [1], and I-P values are based on the values of the National Institute of Standards and Technology which are, in turn, based on the values of the International Bureau.

### 3.2 Basic units

The unit of length is the meter (m) or millimeter (mm); I-P units are the foot (ft.) or the inch (in.). The unit of mass is the kilogram (kg); the I-P unit is the poundmass (lbm). The unit of time is either the minute (min) or the second (s). The unit of temperature is either the degree Celsius (°C) or kelvin (K). I-P units are either the degree Fahrenheit (°F) or the degree Rankine (°R). The unit of force is the newton (N); the I-P unit is the pound (lb).

### 3.3 Airflow rate and velocity

#### 3.3.1 Airflow rate

The unit of volumetric airflow rate is the cubic meter per second ($m^3/s$); the I-P unit is the cubic foot per minute (cfm).

#### 3.3.2 Airflow velocity

The unit of airflow velocity is the meter per second (m/s); the I-P unit is the foot per minute (fpm).

### 3.4 Water flow rate

The unit of liquid volume is the liter (L); the I-P unit is the gallon (gal). The unit of liquid flow rate is the liter per second (L/s); the I-P unit is the gallon per minute (gpm).

### 3.5 Dimensionless groups

Various dimensionless quantities appear in the text. Any consistent system of units may be employed to evaluate these quantities, unless a numerical factor is included, in which case, units must be as specified.

### 3.6 Physical constants

The value of standard gravitational acceleration shall be taken as 9.80665 $m/s^2$ (32.174 $ft/s^2$) at mean sea level at 45° latitude [2]. The density of distilled water at saturation pressure shall be taken as 998.278 $kg/m^3$ (62.3205 $lbm/ft^3$) at 20 °C (68°F) [3]. The density of mercury at saturation pressure shall be taken at 13595.1 $kg/m^3$ (848.714 $lbm/ft^3$) at 0 °C (32°F) [3]. The specific weights in $kg/m^3$ ($lbm/ft^3$) of these fluids under standard gravity in a vacuum are numerically equal to their densities at corresponding temperatures.

## 4. Definitions

### 4.1 Louver

A louver is a device comprised of multiple blades, which, when mounted in an opening, permits the flow of air, but inhibits the entrance of other elements.

### 4.2 Essential facilities

Buildings and other structures designated as essential facilities, including, but not limited to, hospitals; other health care facilities having emergency treatment facilities; jails and detention facilities; fire, rescue and police stations, and emergency vehicle garages; designated emergency shelters; communication centers and other facilities required for emergency response; power generating stations; other public utility facilities required in an emergency; and buildings and other structures having critical national defense functions.

### 4.3 Non-essential facilities

All buildings and structures not defined as essential facilities in Section 4.2.