

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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AMCA Standards

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

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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 Système 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 (m³/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/s² (32.174 ft/s²) at mean sea level at 45° latitude [2]. The density of distilled water at saturation pressure shall be taken as 998.278 kg/m³ (62.3205 lbm/ft³) at 20 °C (68°F) [3]. The density of mercury at saturation pressure shall be taken at 13595.1 kg/m³ (848.714 lbm/ft³) at 0 °C (32°F) [3]. The specific weights in kg/m³ (lbm/ft³) 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.