

An Overview on Impact Windows

Impact-resistant windows are evaluated two ways for design pressure (DP): the lower DP rating is the “official” DP that appears on a window’s AAMA label. The first test evaluates a window’s structural performance (air infiltration, water resistance and resistance to wind loading, among other criteria) and is written jointly by the American Architectural Manufacturers Association (AAMA), the Window & Door Manufacturers Association (WDMA) and the Canadian Standards Association (CSA). The second test standard applicable to impact-resistant windows is the very stringent ASTM E1996, “Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes,” which evaluates the product’s ability to resist the impact of flying debris and subjects the window to thousands of cycles of severe wind loading after the impact to ensure it will hold up to both positive and negative pressures.

When Viwinco started its impact-resistant product line, we tested to this industry standard of DP50. Now with the introduction of fortified housing (which necessitates windows that meet a higher DP standard) and increasingly tougher codes being imposed on coastal communities, Viwinco has taken the leadership role by enhancing its impact DP ratings.

With our latest round of testing, we now have a DP65 OceanView double-hung window that meets not only the AAMA standard but the ASTM standard of impact DP65 too. Additionally, we have a DP70 OceanView single-hung window that meets these standards.



Viwinco tests all its products in-house at our state-of-the-art R&D facility. Third-party technicians certify our results.

Glossary of Terms

American Architectural Manufacturers Association (AAMA) Design Pressure (Structure)

A rating that identifies the load induced by wind and other dynamic pressures. The higher a DP rating, the more resistant it is to the effects of wind and other pressures.

Performance Grade

A numeric designation that defines the performance of a product in accordance with AAMA standards. The performance grade is determined upon successful completion and verification of all applicable tests (air, water, structure).

ASTM Impact DP

The performance of our windows impacted by a “missile” (for our testing purposes, a 9-lb. 2x4) and subjected to 4,500 positive and 4,500 negative static pressure differentials. The number represents pounds per square foot (psf). ASTM International was known until 2001 as the American Society of Testing & Materials.

Wind Speed Equivalent (DP Rating)

In the testing environment, wind speeds are simulated through a vacuum or blowing air that equals the same pressure as the wind speeds noted on the other side. At a DP50, the associated wind speed is 139.8 mph. As part of the certification test, wind speeds 1.5 times this are cycled to ensure the window will meet greater wind loads.



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Design Pressure Ratings Guide



At-a-glance DP ratings chart and explanation of associated terminology



A Word About This Guide

We created this guide as a quick reference to help you understand the products Viwinco offers at various DP ratings and sizes. It also easily allows you to objectively compare our product line to other window manufacturers’ offerings.

As much as we tried to simplify this guide, there are some areas that might cause confusion. We’d like to attempt to explain them here:

- Now that we’ve received commercial ratings for the vast majority of our S-Series/Cambridge product line, you’ll note different performance grades. Those with an “R” before them stand for residential, and those with a “C” designate commercial ratings.
- The results displayed inside this document are accurate based on the sizes and reinforcement required to obtain the DP ratings in each performance class (i.e., residential, commercial). For example, a commercial window size 48x72 has a higher DP rating than our Cambridge 48x72. This is because we tested our commercial window at this size with the required reinforcement to pass the commercial test thus achieving a higher DP.
- Gateway sizes for residential and commercial windows are different. Commercial gateways are larger than residential ones and require a minimum DP30; residential gateways are smaller than commercial ones and require only a minimum DP15. For our gateway double-hung commercial window we had to test a 56x91 window which required additional reinforcement.



DP Ratings Guide

SIZE	S-Series, Cambridge Residential		S-Series, Cambridge Commercial		OceanView Residential		OceanView Plus Residential		
	AAMA DP Structure	Performance Grade	AAMA DP Structure	Performance Grade	ASTM Impact DP	Wind Speed Equivalent	ASTM Impact DP	Wind Speed Equivalent	
						DP Rating		DP Rating	
DH	≤36x72	DP70	R70	DP60*	C60*	DP50*	139.8 mph	DP65	159.3 mph
	>36x72 ≤48x72	DP50	R50	DP60	C60	DP50	139.8 mph	--	--
	>48x72 ≤52x80	DP45	R45	DP35*	C35*	--	--	--	--
	>52x80 ≤56x91	DP35	R35	DP35	C35	--	--	--	--
SH	≤36x72	DP70	R70	DP60*	C60*	DP50*	139.8 mph	DP70	165.4 mph
	>36x72 ≤48x72	DP55	R55	DP60	C60	DP50	139.8 mph	--	--
	>48x72 ≤52x80	DP45	R45	DP45	C45	--	--	--	--
	>52x80 ≤56x91	DP40	R40	DP40	C40	--	--	--	--
Geo	≤72x64	DP50*	R50*	DP50*	C50*	DP50	139.8 mph	--	--
	≤72x84	DP50	R50	DP50	C50	--	--	--	--
	≤96x48	DP60	R60	DP60	C60	--	--	--	--
Pic	≤72x72	DP55*	R55*	DP55	C55*	DP50	139.8 mph	--	--
	≤72x84	DP55	R55	DP55	C55	--	--	--	--
	≤96x48	DP70	R70	DP70	C70	--	--	--	--
Cx	≤36x72	DP55	R55	DP55	C55	DP50	139.8 mph	--	--
Ax	≤60x36	DP50	R50	DP50	C50	DP50	139.8 mph	--	--
Px	≤72x72	DP50	R50	DP50	C50	DP50	139.8 mph	--	--
2-Lite SL	≤72x48	DP60	R60	DP60	C60	DP50*	139.8 mph	--	--
	>72x48 ≤96x48	DP50	R50	DP50	C50	DP50	139.8 mph	--	--
	>96x48 ≤96x60	DP30	R30	DP30	C30	--	--	--	--
3-Lite SL (Equal)	≤138x60	DP30	R30	DP30	C30	--	--	--	--
PD XO	≤96x96	DP50	R50	--	--	DP50	139.8 mph	--	--
PD OXO	≤108x82	DP50	R50	--	--	DP50	139.8 mph	--	--
	≤144x96	DP50	R50	--	--	--	--	--	--
Bay 30°/45° Bow 10°	≤120x72	**	**	--	--	DP50	139.8 mph	--	--
Bay 30°/45° Bow 10°	≤144x72	**	**	--	--	--	--	--	--

*Qualifies because tested and certified at larger size.

**Overall DP dependent on lowest DP value of windows selected.