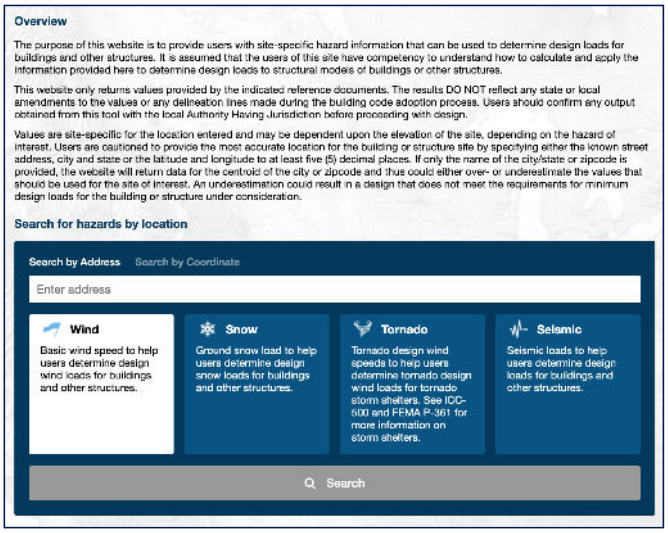
Haas Door
A Nofziger Company

Texas TDI Wind Load Garage Doors

Evaluated for Compliance by the Texas Department of Insurance

How can I determine my garage door requirements?

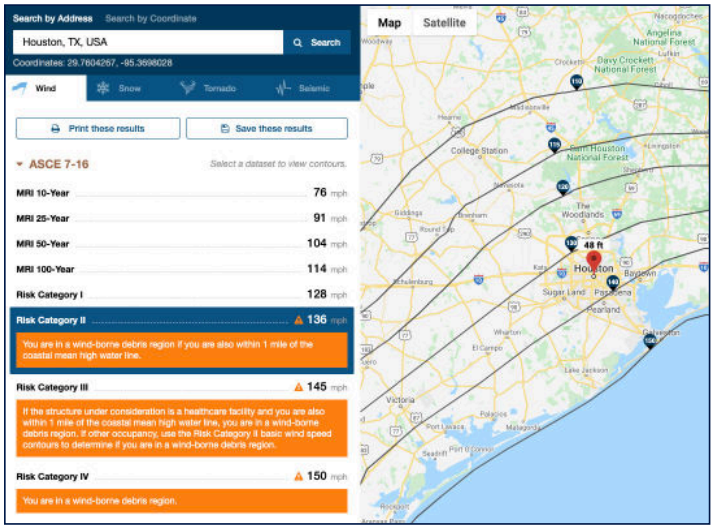


Step 1:

Go to https://hazards.atcouncil.org/ to determine the wind speed (MPH) required for the location the door is being installed.

Step 2:

Once at the website, enter the address where the door is being installed, select wind and hit the search button. After the search button is selected the screen below will appear.



Step 3:

Select the required Risk Category to determine the wind speed (MPH) required for the location. If you are unsure which category the building falls in contact a county or local municipality building official for the specific requirement. The Risk Categories are defined based on the nature of occupancy:

- Risk Category I - Buildings such as agricultural and storage facilities representing low hazard to human life.
- Risk Category II - All buildings not listed in Categories I, III and IV. This is the default for "typical" buildings.
- Risk Category III - Buildings such as schools, nursing homes, public facilities, power generating and water supply installations that represent substantial hazard to human life.
- Risk Category IV - Essential facilities, such as hospitals, fire and police stations, shelters, airport control towers and defense installations.

Step 4:

Determine the Exposure Category based on the building location. If you are unsure which category the building falls in contact a county or local municipality building official for the specific requirement.

Exposure B: Urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions.

Exposure C: Open terrain with scattered obstructions, including flat open ground and grasslands.

Exposure D: Within 600 ft. of ocean front or other large body of water, measuring at least 5,000 ft. across.

See further explanation of Exposure Categories on Page 5.

Step 5:

Determine if the building is single or double story.

Step 6:

Find the required Design Pressure (in PSF) based on the previous information gathered from the previous Steps by using the charts on the following page. If the width of door is not available in the charts the Wind Load Calculator mentioned on the back of the brochure may be used.

What design pressure do I need?

After reviewing the steps on the previous page, use the information gathered to find the correct design pressure.

Garage Door Wind Load Guide - Values in PSF									
Mean Roof Height	Door Size	Design Pressure Based on ASCE 7-16 2018 International Residential Code (IRC) and International Building Code (IBC) Exposure B, 100-150 MPH Basic Wind Speed							
Basic Wind Speed →		100 MPH	105 MPH	110 MPH	115 MPH	120 MPH	130 MPH	140 MPH	150 MPH
15 Feet Single Story	Single - 9′ x 7′	9.6 -9.6	9.6 -9.6	9.6 -10.6	10.2 -11.6	11.1 -12.6	13.1 -14.8	15.2 -17.1	17.4 -19.7
	Double - 16′ x 7′	9.6 -9.6	9.6 -9.6	9.6 -10.0	9.8 -10.9	10.7 -11.9	12.5 -13.9	14.5 -16.2	16.7 -18.6
25 Feet Double Story	Single - 9′ x 7′	9.6 -10.1	9.9 -11.2	10.8 -12.2	11.8 -13.4	12.9 -14.6	15.1 -17.1	17.5 -19.8	20.1 -22.8
	Double - 16′ x 7′	9.6 -9.6	9.6 -10.5	10.4 -11.6	11.3 -12.6	12.3 -13.8	14.5 -16.2	16.8 -18.7	19.3 -21.5

Mean Roof Height	Door Size	Design Pressure Based on ASCE 7-16 2018 International Residential Code (IRC) and International Building Code (IBC) Exposure C, 100-150 MPH Basic Wind Speed							
Basic Wind Speed →		100 MPH	105 MPH	110 MPH	115 MPH	120 MPH	130 MPH	140 MPH	150 MPH
15 Feet Double Story	Single - 9′ x 7′	11.5 -13.0	12.7 -14.4	13.9 -15.8	15.2 -17.2	16.6 -18.8	19.5 -22.0	22.6 -25.5	25.9 -29.3
	Double - 16′ x 7′	11.0 -12.3	12.2 -13.6	13.4 -14.9	14.6 -16.3	15.9 -17.7	18.7 -20.8	21.6 -24.1	24.8 -27.7
25 Feet Double Story	Single - 9′ x 7′	12.7 -14.4	14.1 -15.9	15.4 -17.4	16.9 -19.1	18.4 -20.8	21.5 -24.4	25.0 -28.2	28.7 -32.4
	Double - 16′ x 7′	12.2 -13.6	13.5 -15.0	14.8 -16.5	16.2 -18.1	17.6 -19.6	20.6 -23.0	23.9 -26.7	27.5 -30.6

Mean Roof Height	Door Size	Design Pressure Based on ASCE 7-16 2018 International Residential Code (IRC) and International Building Code (IBC) Exposure D, 100-150 MPH Basic Wind Speed							
Basic Wind Speed →		100 MPH	105 MPH	110 MPH	115 MPH	120 MPH	130 MPH	140 MPH	150 MPH
15 Feet Single Story	Single - 9′ x 7′	14.0 -15.8	15.4 -17.4	16.9 -19.1	18.5 -20.9	20.1 -22.7	23.6 -26.7	27.4 -30.9	31.4 -35.5
	Double - 16′ x 7′	13.4 -14.9	14.7 -16.4	16.2 -18.0	17.7 -19.7	19.3 -21.5	22.6 -25.2	26.2 -29.2	30.1 -33.6
25 Feet Double Story	Single - 9′ x 7′	15.2 -17.2	16.7 -18.9	18.4 -20.8	20.1 -22.7	21.9 -24.7	25.7 -29.0	29.8 -33.7	34.2 -38.6
	Double - 16′ x 7′	14.5 -16.2	16.0 -17.9	17.6 -19.6	19.2 -21.4	20.9 -23.4	24.6 -27.4	28.5 -31.8	32.7 -36.5

For the Commercial Door Wind Load Guide, see Technical Data Sheet #155v on the DASMA website or contact your local municipality building official for specific requirements and building codes.

What's available from Haas Door?

Find the width of your door, then find the design pressure requirement. If the option desired is unavailable at that required design pressure, go to a higher pressure with the desired options available.

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NOTE: Door heights available up to 16′ high

DESIGN PRESSURE (PSF)	DOOR WIDTH Up to 8′-2″	DESIGN PRESSURE (PSF)	DOOR WIDTH 8′-3″ to 9′-2″	DESIGN PRESSURE (PSF)	DOOR WIDTH 9′-3″ to 10′-2″	DESIGN PRESSURE (PSF)	DOOR WIDTH 10′-3″ to 12′-2″	DESIGN PRESSURE (PSF)	DOOR WIDTH 12′-3″ to 14′-2″	DESIGN PRESSURE (PSF)	DOOR WIDTH 14′-3″ to 16′-2″	DESIGN PRESSURE (PSF)	DOOR WIDTH 16′-3″ to 18′-2″
+23.9 -27.0	L L L	+21.3 -24.1	L L L	+20.1 -22.7	L L	+24.3 -27.1	L	+20.8 -23.2	L	+18.3 -20.4	L	+18.9 -21.1	L L L
+26.5 -30.0	1 L L	+23.6 -26.7	1 L L	+21.3 -24.1	1 L L	+27.1 -30.1	L	+23.2 -25.9	L	+20.4/ -22.7	L	+19.6 -21.8	L
+27.8 -31.4	L L L	+24.8 -28.0	L L L	+21.7 -24.6		+28.9 -32.2	L1 L L	+24.8 -27.7	L1 L L	+21.8 -24.3	L1 L L	+20.4 -22.7	1 L
+30.0 -33.9		+26.7 -30.2		+24.3 -27.1	L	+31.3 -34.9	L* L* L* L* L*	+26.1 -29.1	1 L	+22.9 -25.5	1 L	+23.9 -26.7	L L L
+35.0 -39.0	L*	+27.1 -30.1	L	+27.1 -30.1	L	+31.7 -35.4	L L	+27.2 -30.4	L L L	+23.9 -26.7	L L L	+24.7 -27.6	
+37.0 -41.8	L*	+28.9 -32.2	L1 L	+28.9 -32.2	L1 L	+32.9 -36.6	L	+28.3 -31.5	L	+24.8 -27.6	L	+30.0 -33.1	
+40.0 -45.0	L*	+35.0 -39.0	L*	+31.3 -34.9	L*	+37.4 -41.7	* * *	+30.0 -33.1	*	+26.8 -30.0	L L L	+30.0 -33.1	*
+41.1 -46.4	L* * *	+37.0 -41.8	L*	+35.0 -39.0	L*	+38.0 -42.0	L*1	+30.6 -34.2	L L L	+30.0 -33.1	*	+30.0 -33.9	L*1 L* L* L*
+48.0 -52.0	L*1 L* L*	+40.0 -45.0	L*	+37.0 -41.8	L*	+41.5 -46.3		+31.3 -34.9	L* L* L* L* L*	+31.3 -34.9		+45.0 -50.0	* * *
		+41.1 -46.4	L* * *	+37.4 -41.7	*	+48.0 -52.0	*	+35.7 -39.8		+31.3 -34.9	L* L* L* L* L*		
		+48.0 -52.0	L*1 L* L*	+48.0 -52.0	L*1 L* L*			+37.4 -41.7	* * *	+33.7 -37.2			
								+38.0 -42.0	L*1	+37.4 -41.7	* * *		
								+38.4 -42.4		+38.0 -42.0	L*1		
								+45.0 -50.0	*	+45.0 -50.0	*		
								+48.0 -52.0	*	+48.0 -52.0	*		

Texas Wind Load
Impact/Non-Impact

Evaluated by the Texas Department of Insurance for Compliance with the Wind Loads Specified in the International Residential Code and International Building Code.

- = **600, 700, 2000, & 800 Series**
- = **5700, 5200, & 5800 Series**
- = **2000, 2400 & 2500 Series**
- = **American Tradition™ 9000 Series**
- = **Residential Aluminum 360 Series & Commercial Aluminum 320 Series**

L = Lites Available
*** = Impact Resistant**
1 = One Lite/Section

Frequently asked questions

What is the difference between wind speed and wind pressure?

Wind pressure represents the force exerted by wind. It is calculated starting with wind speed, but is greatly dependent on a number of factors related to the structural configuration and site location. It is not enough to say a product will meet a given wind speed alone. Basic wind speed, exposure categories, importance factor, mean roof height, door area, door location on the building and wind directionality factor are all used to calculate wind pressures on garage doors.

NOTE: See DASMA Technical Data Sheet #194 - PSF versus MPH in Door Specifications for more information.

Why are wind pressures better than wind speeds when specifying doors?

Wind pressure equates to the amount of work or energy that the wind expends due to its velocity or speed. This energy or work can be either calculated or tested. It is not enough to only say a product will meet a given wind speed which is measured in miles per hour.

NOTE: See DASMA Technical Data Sheet #194 - PSF versus MPH in Door Specifications for more information.

What does impact rated mean?

Impact rated (or impact resistant) refers to the ability of the garage door and garage door glazing to resist penetration from flying debris during a high wind event.

What is the differece between Exposure B, Exposure C, and Exposure D?

An exposure category (B, C, or D) is a condition that adequately reflects the characteristics of ground surface irregularities for the site where a structure is located. Exposure category is used in calculating the required design wind pressures for a structure with exposure B yielding the lowest wind pressures and exposure D yielding the highest wind pressures.


674 Almond

Exposure B applies to urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger. Exposure B is typically associated with site locations in a residential subdivision. Most site locations are assumed to be Exposure B unless the site meets the definition of another type of exposure.

Exposure C applies to open terrain with scattered obstructions having heights generally less than 30 feet extending more than 1,500 feet from the building site. Exposure C includes flat open country, grasslands, and shorelines in hurricane-prone regions.

Exposure D applies to flat, unobstructed areas exposed to wind flowing over open water (excluding shorelines in hurricane-prone regions) for a distance of at least 1 mile. Exposure D includes shorelines in inland waterways, the Great Lakes, and coastal areas of California, Oregon, Washington, and Alaska. Exposure D extends inland from the shoreline a distance of 1,500 feet or 10 times the height of the building or structure, whichever is greater.


770 Charcoal

How do I know what the wind pressure requirements are for my garage door?

DASMA has a helpful Technical Data Sheet (#155), and the DASMA web site has a wind load calculator that can estimate the wind load requirements on your garage door. However, the building department having authority in your area is the sole and final determiner of the wind load requirements for your garage door. Always check with either a county or a local municipality building official for specific requirements.

Why are positive and negative wind load values required?

In a high wind event, both positive and negative pressures are generated on the garage door. Positive pressures are loads that try to push your garage door into the building, and negative pressures try to pull the door out of the building. Whether push or suction occurs on a garage door is dependent on wind direction and the direction the garage door faces.

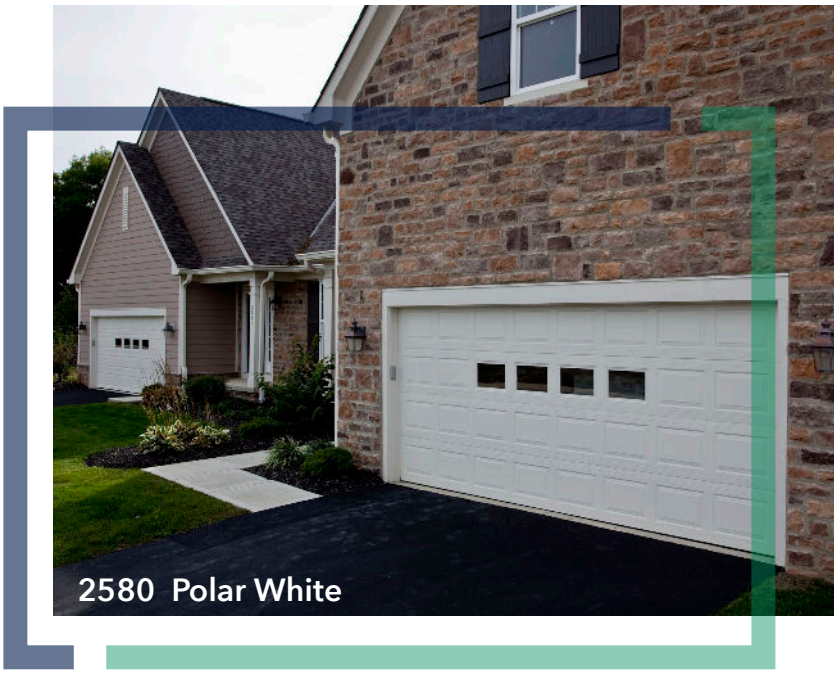
Definitions and Acronyms

Definitions:

Design Pressure: The measurement of resistance in both positive and negative directions that a door system must withstand. Design pressures are expressed in pounds per square foot (psf) and are expressed in both positive and negative values. Also known as design load.

Test Pressure: The actual tested wind pressure resistance that a door system will withstand during laboratory testing. Most building officials usually require that the test pressure be equal to 150% of the design pressure. Also known as the test load or ultimate load.

Wind Velocity: The actual measured speed of airflow during a wind event; usually expressed in MPH. Wind velocity is typically measured at 33 feet (10 meters) above ground level at airports and similar open country locations. Also known as Basic Wind Speed and is used in the design pressure calculation.



Acronyms:

TDI: Texas Department of Insurance. The Texas Department of Insurance regulates the state's insurance industry, oversees the administration of the Texas worker's compensation system, performs the duties of the State Fire Marshall's Office, and provides administrative support to the Office of Injured Employee Counsel - a separate agency.

Texas Insurance Code requires TDI to:
- Regulate the business of insurance in Texas.
- Protect and ensure the fair treatment of consumers.
- Ensure fair competition in the insurance industry to foster a competive market.
- Administer the Texas workers' compensation system as provided by the Texas Labor Code.
- Ensure that the insurance code and other laws regarding insurance and insurance companies are executed.

DASMA: Door & Access Systems Manufacturers Association is North America's trade association for manufacturers of garage doors, rolling doors, high performance doors, garage door operators, vehicular gate operators, and access control products. DASMA members' products represent more than 95% of the U.S. market for the industry. It is also a standards development organization accredited by the American National Standards Institute (ANSI) which has developed many standards for the industry, several of which have been approved by ANSI.
The members manufactured products are sold in virtually every county in America, in every U.S. state, every Canadian province, and in more than 80 countries worldwide. As the authoritative voice of the industry, they promote a better industry and better products that provide enhanced protection against high winds, fire, entrapment, and injuries.

ASCE 7: American Society of Civil Engineers, Minimum Design Loads and Associated Criteria for Buildings and Other Structures which is the basis for wind load calculations used in most building codes.

ANSI: American National Standards Institute. A private, non-profit organization that administers and coordinates the U.S. voluntary standards and conformity assessment system.

MRH: Mean Roof Height. The height above grade level of the midpoint of the roof. Mean roof height is calculated be averaging the eave and ridge heights, and is used in the design pressure calculations.

Need more info?

Texas Product Approval Search:
www.tdi.texas.gov/wind/prod/gdrsect.html

Texas Designated Catastrophe Area Wind Speed Maps:
www.tdi.texas.gov/wind/maps/index.html#

DASMA:
www.dasma.com

DASMA Standards:
www.dasma.com/dasma-standards/

ANSI/DASMA 108:
Test standard for testing garage door to loads generated by the wind. This test is known as the uniform static air pressure test.
https://www.dasma.com/wp-content/uploads/pubs/Standards/DASMA-108-Web.pdf

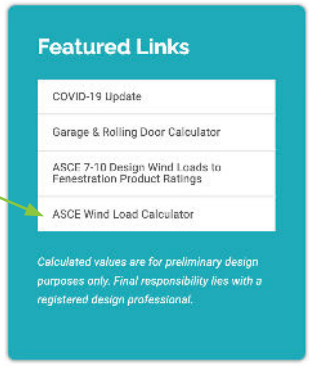
ANSI/DASMA 115:
Test standard for testing garage doors to load generated by flying debris typically found in high wind events. This test is known as the large missile impact test.
https://www.dasma.com/wp-content/uploads/pubs/Standards/DASMA-115-Web.pdf

DASMA Technical Data Sheets (TDS):
www.dasma.com/technical-data-sheets/#commercial-residential-garage-doors

TDS #155 Residential and Commercial Wind Load Guides:
www.dasma.com/wp-content/uploads/2021/07/TDS155.pdf

Garage Door/Rolling Door Wind Load Calculator:
based on ASCE 7-16 (in Excel Format)
www.dasma.com/technical-data-sheets/

Determine wind speed based on location:
https://hazards.atcouncil.org/#/



Texas
Wind Load
Impact/Non-Impact

Who do I talk to?

Always check with either a county or a local municipality building official for specific requirements and building codes. It is important to also contact your homeowner's insurance company. Many insurance companies may require or encourage doors that are different than those required by building code. Any Haas Door dealer in your area can also answer wind load and garage door related questions. To find a dealer in your area please visit:
haasdoor.com/locator

Ver. 1.2 – 9/21

320 Sycamore
Wauseon, OH 43567

haasdoor.com

Family Owned &
Manufactured in the USA

open the door to
endless possibilities