



DASMA
Door & Access Systems
Manufacturers Association
International

COMMERCIAL & RESIDENTIAL GARAGE DOOR DIVISION

TECHNICAL DATA SHEET

#155k

1300 Sumner Avenue
Cleveland, Ohio 44115-2851
Phone: 216-241-7333 • Fax: 216-241-0105
E-mail: dasma@dasma.com

DASMA Garage Door and Commercial Door Wind Load Guide Based on ASCE 7-98, ASCE 7-02 and ASCE 7-05

DASMA (the Door & Access Systems Manufacturers Association) has created a **GARAGE DOOR WIND LOAD GUIDE** based on ASCE 7-98, ASCE 7-02* and ASCE 7-05* wind load requirements. The guide is intended to be used by code officials, engineers, architects, builders, owners, insurance companies and other interested parties. The Wind Load Guide also references a DASMA test procedure (ANSI/DASMA 108) which may be used by manufacturers to determine structural load performance of a garage door.

The guide is published by the Commercial & Residential Garage Door Division of DASMA which represents an estimated 95% of all sectional garage doors sold in the United States. The Division's Technical Committee, the best technical talent in the garage door industry, developed these tables based on the latest civil engineering and building code criteria.

ASCE 7-98, 7-02 and 7-05 use basic wind speed¹, exposure categories², importance factor³, mean roof height⁴, door area, door location on the building⁵ and wind directionality factor⁶ to figure wind loads on garage doors. This guide covers the most common scenarios.

The DASMA members believe the **DASMA GARAGE DOOR WIND LOAD GUIDE** will improve understanding of the issues related to garage doors and wind loads. DASMA continues to monitor developments regarding wind loads and the building codes in general, and continues to develop solutions to problems which affect the garage door industry. Please contact DASMA with any questions or comments.

* Wind load provisions are technically equivalent to those in ASCE 7-98

¹Ref: Figs 6-1, 6-1a, 6-1b, 6-1c, Pages 32-36. Basic wind speed map.

²Ref: Table 6-5, Page 59. Velocity Pressure Exposure Coefficients.

³Ref: Table 6-1, Page 54. Importance factors.

⁴Ref: Table 6-5, Page 59. Velocity Pressure Exposure Coefficients.

⁵Ref: Fig. 6-8, Page 52. External Pressure Coefficients, along with Table 6-7, Page 61, Internal Pressure Coefficients

⁶Ref: Table 6-6, Page 60. Wind Directionality Factor.

Note: Technical Data Sheets are information tools only and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific recommendations for their products and check the applicable local regulations.

This Technical Data Sheet was prepared by the members of DASMA's Commercial & Residential Garage Door Division Technical Committee. DASMA is a trade association comprising manufacturers of rolling doors, fire doors, grilles, counter shutters, sheet doors, and related products; upward-acting residential and commercial garage doors; operating devices for garage doors and gates, sensing devices, and electronic remote controls for garage doors and gate operators; as well as companies that manufacture or supply either raw materials or significant components used in the manufacture and installation of the Active Members' products.

GARAGE DOOR WIND LOAD GUIDE
BASED ON ASCE 7-98, ASCE 7-02 AND ASCE 7-05, EXPOSURE B

Mean Roof Height	Door Size	85 MPH	90 MPH	100 MPH	110 MPH	120 MPH	130 MPH	140 MPH	150 MPH
15 Feet Single Story	Single 9' x 7'	11.4	12.8	15.8	19.1	22.8	26.7	31.0	35.6
		-12.9	-14.5	-17.9	-21.6	-25.8	-30.2	-35.1	-40.2
	Double 16' x 7'	10.9	12.3	15.2	18.3	21.8	25.6	29.7	34.1
		-12.2	-13.7	-16.9	-20.4	-24.3	-28.5	-33.1	-38.0
25 Feet Double Story	Single 9' x 7'	11.4	12.8	15.8	19.1	22.8	26.7	31.0	35.6
		-12.9	-14.5	-17.9	-21.6	-25.8	-30.2	-35.1	-40.2
	Double 16' x 7'	10.9	12.3	15.2	18.3	21.8	25.6	29.7	34.1
		-12.2	-13.7	-16.9	-20.4	-24.3	-28.5	-33.1	-38.0

Design pressures above are in Pounds per Square Foot (PSF)

Testing, if required by local authority, may be performed to ASTM E-330, or preferably ANSI/DASMA 108, with acceptance criteria in accordance with ANSI/DASMA 108.

Test conditions:

1. Garage doors shall be tested to both negative and positive pressures. Doors shall be installed simulating normal conditions (i.e., top roller in track radius, other rollers in tracks, all hinges in place, reinforcing hardware in place)
2. Test durations for each test direction shall be as follows:
 - A. 10 seconds at design pressure.
 - B. 10 seconds at 1.5 times the design pressure.

Standard engineering principles may be used to interpolate or extrapolate test results to door sizes not specifically tested. Doors shall include a manufacturer's label certifying compliance to specific load.

This guide is provided for reference purposes only. In all cases the local building authority is the sole and final determiner of the structural and safety requirements, and suitability of the garage door.

Notes:

- Basic Wind Speeds above are three second peak-gust values
- Negative pressures assume door has 2 feet of width in building's end zone.
- Garage doors evaluated as attached to enclosed buildings with a Use Factor of 1.0.
- Doors larger than 100 square feet should use the 16 x 7 loads. Doors less than 100 square feet may be interpolated.
- Garage doors evaluated as Components and Cladding
- Installation details vary. Consult manufacturer's instructions.
- For buildings representing a substantial hazard to human life in the event of failure, or buildings designated as "essential facilities", tabulated wind load values are to be multiplied by a factor of 1.15.

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GARAGE DOOR WIND LOAD GUIDE
BASED ON ASCE 7-98, ASCE 7-02 AND ASCE 7-05, EXPOSURE C

Mean Roof Height	Door Size	85 MPH	90 MPH	100 MPH	110 MPH	120 MPH	130 MPH	140 MPH	150 MPH
15 Feet Single Story	Single 9' x 7'	13.9	15.6	19.2	23.2	27.7	32.5	37.7	43.2
		-15.7	-17.6	-21.7	-26.3	-31.3	-36.7	-42.6	-48.9
	Double 16' x 7'	13.3	14.9	18.4	22.3	26.5	31.1	36.1	41.4
		-14.8	-16.6	-20.5	-24.8	-29.5	-34.7	-40.2	-46.2
25 Feet Double Story	Single 9' x 7'	15.4	17.2	21.2	25.7	30.6	35.9	41.6	47.8
		-17.4	-19.5	-24.0	-29.1	-34.6	-40.6	-47.1	-54.0
	Double 16' x 7'	14.7	16.5	20.3	24.6	29.3	34.4	39.9	45.8
		-16.4	-18.4	-22.7	-27.4	-32.7	-38.3	-44.5	-51.0

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- Garage doors evaluated as Components and Cladding
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GARAGE DOOR WIND LOAD GUIDE
BASED ON ASCE 7-98, ASCE 7-02 AND ASCE 7-05, EXPOSURE D

Mean Roof Height	Door Size	85 MPH	90 MPH	100 MPH	110 MPH	120 MPH	130 MPH	140 MPH	150 MPH
15 Feet Single Story	Single 9' x 7'	16.8	18.9	23.3	28.2	33.5	39.3	45.6	52.4
		-19.0	-21.3	-26.3	-31.8	-37.9	-44.5	-51.6	-59.2
	Double 16' x 7'	16.1	18.1	22.3	27.0	32.1	37.7	43.7	50.2
		-18.0	-20.1	-24.9	-30.1	-35.8	-42.0	-48.7	-55.9
25 Feet Double Story	Single 9' x 7'	18.3	20.5	25.3	30.6	36.5	42.8	49.6	57.0
		-20.7	-23.2	-28.6	-34.6	-41.2	-48.4	-56.1	-64.4
	Double 16' x 7'	17.5	19.6	24.2	29.3	34.9	41.0	47.5	54.5
		-19.5	-21.9	-27.0	-32.7	-38.9	-45.7	-53.0	-60.8

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COMMERCIAL DOOR WIND LOAD GUIDE
BASED ON ASCE 7-98, ASCE 7-02 AND ASCE 7-05, EXPOSURE B

Mean Roof Height	Door Size	85 MPH	90 MPH	100 MPH	110 MPH	120 MPH	130 MPH	140 MPH	150 MPH
15 Feet	8' x 8'	10.5	11.7	14.5	17.5	20.9	24.5	28.4	32.6
		-11.9	-13.3	-16.4	-19.9	-23.6	-27.7	-32.2	-36.9
	10' x 10'	10.1	11.4	14.0	17.0	20.2	23.7	27.5	31.6
		-11.4	-12.7	-15.7	-19.0	-22.7	-26.6	-30.8	-35.4
	14' x 14'	10.0	10.8	13.3	16.1	19.2	22.5	26.1	30.0
		-10.7	-12.0	-14.8	-17.9	-21.4	-25.1	-29.1	-33.4
25 Feet	8' x 8'	10.5	11.7	14.5	17.5	20.9	24.5	28.4	32.6
		-11.9	-13.3	-16.4	-19.9	-23.6	-27.7	-32.2	-36.9
	10' x 10'	10.1	11.4	14.0	17.0	20.2	23.7	27.5	31.6
		-11.4	-12.7	-15.7	-19.0	-22.7	-26.6	-30.8	-35.4
	14' x 14'	10.0	10.8	13.3	16.1	19.2	22.5	26.1	30.0
		-10.7	-12.0	-14.8	-17.9	-21.4	-25.1	-29.1	-33.4

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COMMERCIAL DOOR WIND LOAD GUIDE
BASED ON ASCE 7-98, ASCE 7-02 AND ASCE 7-05, EXPOSURE C

Mean Roof Height	Door Size	85 MPH	90 MPH	100 MPH	110 MPH	120 MPH	130 MPH	140 MPH	150 MPH
15 Feet	8' x 8'	12.7	14.3	17.6	21.3	25.4	29.8	34.5	39.6
		-14.4	-16.1	-19.9	-24.1	-28.7	-33.7	-39.1	-44.8
	10' x 10'	12.3	13.8	17.0	20.6	24.5	28.8	33.4	38.3
		-13.8	-15.5	-19.1	-23.1	-27.5	-32.3	-37.5	-43.0
	14' x 14'	11.7	13.1	16.2	19.6	23.3	27.3	31.7	36.4
		-13.0	-14.6	-18.0	-21.8	-25.9	-30.4	-35.3	-40.5
25 Feet	8' x 8'	14.1	15.8	19.5	23.6	28.0	32.9	38.2	43.8
		-15.9	-17.8	-22.0	-26.7	-31.7	-37.2	-43.2	-49.6
	10' x 10'	13.6	15.3	18.8	22.8	27.1	31.8	36.9	42.4
		-15.3	-17.1	-21.1	-25.6	-30.4	-35.7	-41.4	-47.6
	14' x 14'	12.9	14.5	17.9	21.6	25.8	30.2	35.1	40.3
		-14.4	-16.1	-19.9	-24.1	-28.7	-33.7	-39.0	-44.8

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- Buildings evaluated as having roof slopes less than 10 degrees
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Mean Roof Height	Door Size	85 MPH	90 MPH	100 MPH	110 MPH	120 MPH	130 MPH	140 MPH	150 MPH
15 Feet	8' x 8'	15.4	17.3	21.3	25.8	30.7	36.1	41.8	48.0
		-17.4	-19.6	-24.1	-29.2	-34.8	-40.8	-47.3	-54.3
	10' x 10'	14.9	16.7	20.6	25.0	29.7	34.9	40.5	46.4
		-16.7	-18.8	-23.2	-28.0	-33.3	-39.1	-45.4	-52.1
	14' x 14'	14.2	15.9	19.6	23.7	28.2	33.1	38.4	44.1
		-15.8	-17.7	-21.8	-26.4	-31.4	-36.9	-42.8	-49.1
25 Feet	8' x 8'	16.8	18.8	23.2	28.1	33.4	39.2	45.5	52.2
		-19.0	-21.3	-26.3	-31.8	-37.8	-44.5	-51.5	-59.1
	10' x 10'	16.2	18.2	22.4	27.2	32.3	37.9	44.0	50.5
		-18.2	-20.4	-25.2	-30.5	-36.3	-42.6	-49.4	-56.7
	14' x 14'	15.4	17.3	21.3	25.8	30.7	36.0	41.8	48.0
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