



DASMA
Door & Access Systems
Manufacturers Association
International

COMMERCIAL & RESIDENTIAL GARAGE DOOR DIVISION

TECHNICAL DATA SHEET

#191

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Sectional Garage Doors and Tornadoes: Wind Mitigation and Personal Safety

A garage door should be properly specified and installed in areas, particularly hurricane-prone regions, where high wind requirements are enforced. An added dimension to these requirements may occur in tornado-prone regions. This Technical Data Sheet provides information on wind mitigation and personal safety involving garage doors in tornado-prone regions.

Tornadoes and Wind Design

Due to probability and economics, many buildings are not designed for tornadoes. However, studies have shown that the edge winds produced by a tornado can be accounted for in a structure's design. These design wind speeds may be higher than the design wind speeds found in local codes, particularly those using common model codes and standards as their basis. For example, the city of Moore, Oklahoma has a base design wind speed of 90 MPH per the 2009 International Building Code, but in 2014 adopted a 135 MPH design wind speed to account for tornado edge winds.

Tornado Rating Scale

Tornado events are rated on the Enhanced Fujita (EF) Scale with six ratings from EF 0 to EF 5. With EF 0 to EF 3 tornados, the damage is mainly to building roofs and landscaping. EF 4 and EF 5 tornados cause considerably more damage by destroying well-constructed homes and causing an incredible amount of damage to strong frame houses, brick and concrete structures and other engineered buildings along with uprooting trees. Garage doors designed to EF 2 wind speeds, like Moore, Oklahoma requirements, are more likely to protect the home on the edges of the tornado from property damage.

<u>EF Rating</u>	<u>3-Second Wind Gust (MPH)</u>	<u>Damage</u>
EF 0	65-85	Light
EF 1	86-110	Moderate
EF 2	111-135	Considerable
EF 3	136-165	Severe
EF 4	166-200	Devastating
EF 5	>200	Incredible

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.

Tornado-Proof vs. Tornado-Resistant

A common misconception is that a garage door, or any exterior building product, can be designed, manufactured and installed as "tornado-proof". Because damage resulting from a tornado event cannot be completely prevented to a garage door or to the adjacent space, the term "tornado-resistant" is more applicable.

Refuge Location

Occupants of a building typically seek a safe place when a tornado warning is issued indicating that the structure may be in the path of a tornado. Besides a basement, cellar or interior building location, tornado shelters and so-called "safe rooms" are refuge locations. A garage, whether attached or detached, is not to be considered a tornado shelter.

Tornado Design vs. Hurricane Design

If a garage door is used in a tornado shelter, it must be designed and installed according to ICC 500, including large missile impact resistance as well as wind load resistance. Garage doors designed for hurricane resistance should NOT be thought of as providing tornado shelter protection unless designed to ICC 500 as both a hurricane shelter and a tornado shelter.

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