

DEFLECTION AND WIND LOADS

This document is intended to provide general recommendations only. Trespa provides these guidelines and all testing, code and design data for informational purposes only and strongly advises that the customer, project owner and architect seek independent advice from a certified construction professional and/or engineer regarding application and installation as well as compliance with design requirements, applicable codes, laws and regulations, and test standards. Please check your local codes and applicable design requirements for proper use.

General

There are numerous factors to consider when designing and installing Trespa® Meteon® panels. Panel appearance, joint solution, cavity depth, drainage/ventilation performance and ease of installation are some important considerations. However, the most important characteristics are panel strength and panel fixing (anchor) design:

- Panel resistance to deflection and stress due to wind loading.
- Load transfer (wind and dead load) via panel anchors to the sub-frame.
- Load transfer through the sub-frame to the building structure.

This document will focus primarily on the ability of Trespa® Meteon® to resist wind load deflection and provide charts to aid in panel fixing distances (anchor spacing).

Design considerations

- Wind loads, fixing distances and panel deflection have to be calculated by a construction professional.
The customer, project owner and architect must always seek independent advice from a certified construction professional and/or engineer regarding the accordance to national and/or local building regulations and certificates. Trespa does not make any representations as to the implications of using a specific fixing system and disclaims any and all liability or damages related thereto.
- Any modification to Trespa® panels or components thereof, its geometry or its specifications, and any use or installation of Trespa® panels or fixing system in combination with any material or component other as advised by Trespa, shall be exclusively at the risk of the parties involved in such modification, use or installation, and each of such parties assumes all such risks.
- Structural performance is an important criteria in the design of a panel system for both aesthetic and structural compliance reasons.
- One of the interesting benefits of Trespa® Meteon® panels used as exterior cladding is the ability to resist wind loading and remain flat. This capacity to resist deflection is determined by a number of factors including panel thickness, mechanical properties and the distance between panel fixings (panel anchors).
- Load bearing of panels, supports and fixings included, has to take place in such a way that maximum loads do not exceed admitted strengths.

Technical details panel deflection

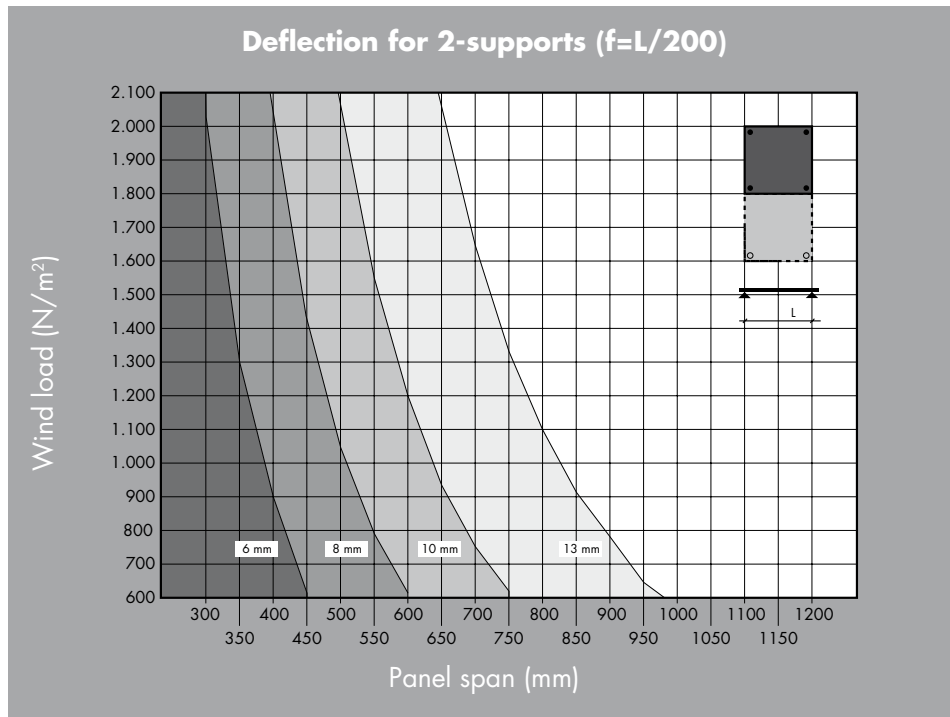
- Allowable panel deflection is often the controlling factor when designing panel installations, although other considerations may impact the adequacy of the design. All design considerations should be evaluated prior to completion of a final panel system.
- A panel's permissible deflection (Δ) is governed by national and/or local building regulations. The maximum allowable panel deflection ($\Delta_{\max}$) represents the distance the panel is allowed to deflect (or "bend") and return to a flat position without affecting structural integrity.
 - In Europe, the maximum allowable panel deflection ($\Delta_{\max}$) commonly used is $L/200$.
 - In the United States, the maximum allowable panel deflection ($\Delta_{\max}$) for semi-rigid exterior cladding is $L/175$ or $3/4"$, whichever is less. This value is derived from the $\Delta_{\max}$ used for glass and glazing (IBC 2006 Section 2403.3)
- A minimum (wind) load must be taken into account to prevent the facade structure from not meeting design and appearance expectations.
- In order to provide the user a general overview of maximum fixing distances (anchor spacing) based on the standard panel thicknesses of Trespa® Meteon®, the following graphs have been developed based on two general panel installation conditions:
 - Single span; two support points in height and/or width.
 - Multiple span; three or more support points in height and/ or width.

Panel deflection L/200

- The graphs below show panel spans for Trespa® Meteon® panel thicknesses from 6 to 13mm for different wind loads and a maximum panel deflection of $L/200$ (commonly used in Europe).
- The maximum permitted panel spans can be found on the horizontal axis for a minimum wind load of 600 N/ m^2 . Higher wind loads will reduce the panel spans according to the graph.
- These charts are intended to provide only a general overview of panel deflection design considerations. Each project must be engineered by a construction professional as required.

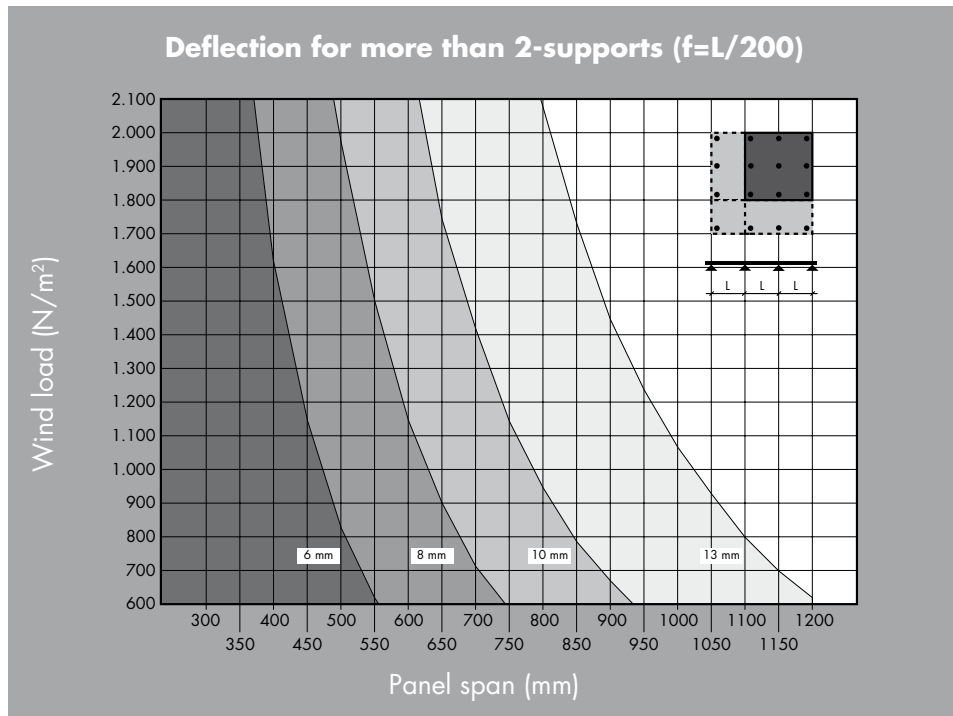
Single span

Panels are often installed with only two support points in height and/or width. This allows the panel to deflect between these two points. The curves shown on the following graph identify the spacing of the panel fixings (panel anchors) and associated wind load resistance that meet the deflection criteria $L/200$ for panels installed using a single span.



Multiple span

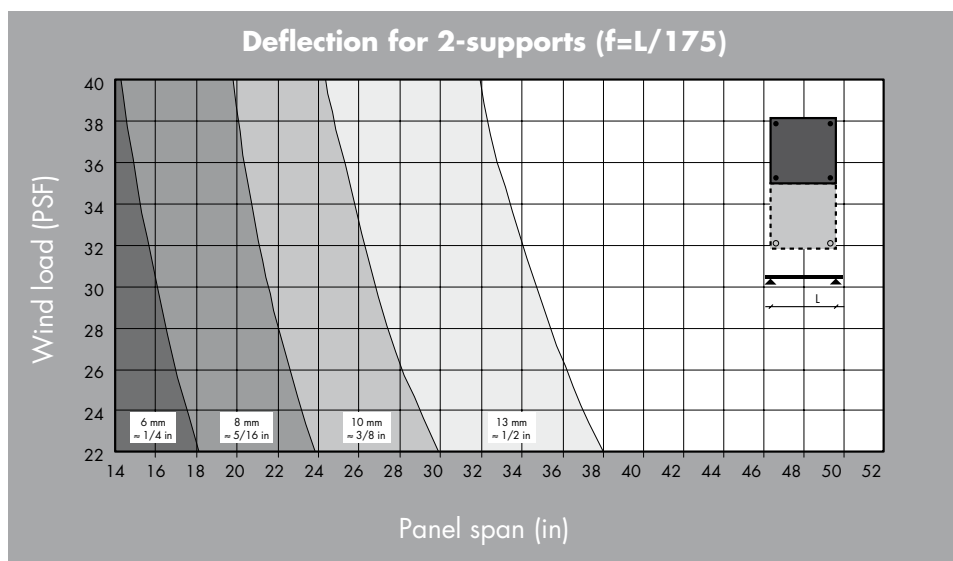
More often, three or more support points are required in width and/or height. The deflection for these panels is a complex combination of influences from each of the multiple spans. The curves shown on the following graph identify the spacing of the panel fixings (panel anchors) and associated wind load resistance that meet the deflection criteria $L/200$ for panels installed with multiple spans.



Panel deflection L/175

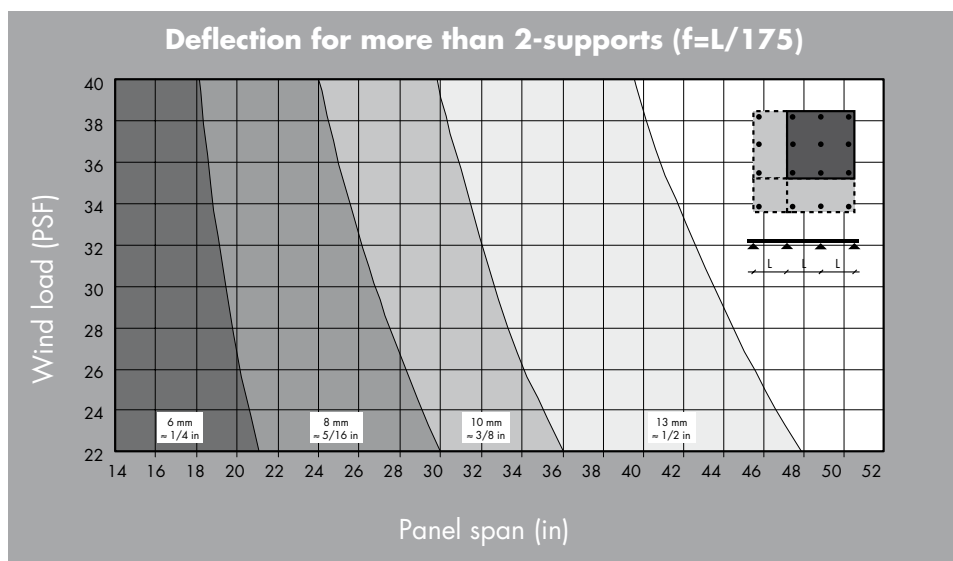
Single span

Panels are often installed with only two support points in height and/or width. This allows the panel to deflect between these two points. The curves shown on the following graph identify the spacing of the panel fixings (panel anchors) and associated wind load resistance that meet the deflection criteria L/175 for panels installed using a single span.



Multiple span

More often, three or more support points are required in width and/or height. The deflection for these panels is a complex combination of influences from each of the multiple spans. The curves shown on the following graph identify the spacing of the panel fixings (panel anchors) and associated wind load resistance that meet the deflection criteria L/175 for panels installed with multiple spans.



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