

Allowable deflections

This Technical Update gives the background to the various deflection limits set in the CWCT Standard for Systemised Building envelopes and removes the absolute limit of 15 mm on deflection of frames supporting double glazing units.

The Standard for Systemised Building Envelopes sets the following overall limits for framing deflections:

For members spanning between floors:

Length	Allowable deflection
$H \leq 3000$	$\Delta \leq H/200$
$3000 < H < 7500$	$\Delta \leq 5 + H/300$
$7500 \leq H$	$\Delta \leq H/250$

All dimensions in mm; H is the storey height

These limits are set for two reasons:

1. To give building occupants confidence that the wall is robust under wind loading. In longer spans the greatest absolute displacements are larger but these occur above the height of the occupants and are less noticeable than those at eye level.
2. To give building occupants confidence that the wall is robust if they lean against it. Setting load and deflection limits ensures a minimum stiffness of the wall. For this reason a minimum design wind load of 800 Pa is required.

These are the limits that will appear in the revised Curtain walling product standard EN 13830.

For members supporting glazing or other panels additional deflection limits are applied. These ensure that the framing member is adequately stiff to act as a support for the panel. The issue is therefore the relative stiffness of the framing member compared to the stiffness of the glazing or panel.

The limit for double glazing units designed to be supported on four edges is given in the Standard for Systemised Building Envelopes as $L/175$ or 15 mm whichever is the lesser value, where L is length of the supported edge in mm. This requirement predates the CWCT Standards. The expression $L/175$ represents the stiffness of the framing member and the 15mm is redundant in this respect. As an absolute limit of 15 mm precludes the use of mullions to support glazing units greater than 3000 mm tall this is no longer a requirement of the CWCT Standard for Systemised Building Envelopes. The revised Curtain walling product standard EN 13830 gives no particular limits for local deflections stating only that limits may apply.

Note that a glazing unit manufacturer may still require tighter limits than $L/175$.

Triple glazing will be stiffer than double glazing and the unit manufacturer should be consulted.

Local deflections for other infill materials are given in CWCT Standard for Systemised Building Envelopes.