

Recommendations For Fully Tempered Interior Butt-Glazed Fixed Glass Panels

- GANA Tempered Glass Thickness Recommendations for Butt-Joint Interior Glass Partitions
- BOCA Model National Building Code Requirements
- Excessive Glass Deflection: Two-side Support (Butt-Joint) Glazing

The Tempering Division of the Glass Association of North America (GANA), formerly the Glass Tempering Association (GTA), has issued a TECHNICAL BULLETIN providing recommended glass thicknesses for butt-joint glazed (vertical edges unsupported) fully tempered glass for INTERIOR glass partitions.

These recommendations address an issue of concern in these applications that has frequently occurred. Some installations have been under-designed and installed with inadequate glass thickness, resulting in excessive glass deflection under indoor loads caused by stack action, HVAC changes, or doors to the outdoors opening and closing, and people pushing or leaning on the glass. Glass that is too thin can tremble, shimmer or deflect excessively even though the fully tempered glass meets design probability of breakage requirements.

TABLE 1 of the attached GANA recommendations provides recommended glass thickness vs. unsupported span to limit excessive glass deflection under UNIFORM indoor air/stack effect pressures.

BOCA's model National Building Code has specific requirements related to these applications . . . "the differential deflection of two adjacent unsupported sides shall not be greater than the thickness of the panels when a force of 50 pounds per lineal foot is applied horizontally to one panel at a point of up to 42 inches above the walking surface."

GANA has also developed an APPENDIX to their TECHNICAL BULLETIN which provides recommended fully tempered glass thicknesses to meet these BOCA requirements for panel height (unsupported vertical span) compared to various distances from the walking surface to the bottom edge of the glass.

As noted in the "CAUTIONS" section of GANA's TECHNICAL BULLETIN, TABLE 1, recommendations are not equivalent to BOCA's requirements as provided in the APPENDIX.

For outdoor applications of butt-joint glazing, with higher design wind loads than indoor applications, similar under-designed uses of glass which is too thin, resulting in excessive deflection, have also occurred. To address such applications, use ASTM E1300 "Standard Practice for Determining the Minimum Thickness of Annealed Glass Required to Resist a Specified Load".

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Technical Bulletin

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The fixed panels of interior glass partitions mounted or restrained on only two sides (top and bottom) require special design considerations:

Glass held only on two sides is much more flexible than glass supported on all four sides. If the glass is too thin, small fluctuations of interior air pressure can cause the glass to tremble or shimmer. People pushing or leaning on glass that is too thin will noticeably deflect the glass. As the unsupported span or height of the glass panels increases, the glass thickness must also increase to maintain a reasonable stiffness. TABLE 1 below shows recommended minimum thicknesses of FULLY TEMPERED glass for various glass heights used in interior butt-glazed fixed glass panels.

TABLE 1: Recommended MINIMUM thickness for FULLY TEMPERED glass used in BUTT-GLAZED FIXED INTERIOR PANELS mounted or restrained at TOP and BOTTOM only.

Unsupported span from top to bottom of glass	Recommended minimum thickness of FULLY TEMPERED Glass
Up to 5 ft	6mm (1/4 in)
Over 5 ft up to 8 ft	10mm (3/8 in)
Over 8 ft up to 10 ft	12mm (1/2 in)
Over 10 ft up to 12 ft	16mm (5/8 in)
Over 12 ft up to 14 ft	19mm (3/4 in)
Over 14 ft up to 16 ft	22mm (7/8 in)
Over 16 ft up to 18 ft	25mm (1 in)
Over 18 ft	Not Recommended

CAUTIONS:

The following cautions are not addressed in any way by TABLE 1.

BOCA's model National Building Code, Section 2402.3, states, "INTERIOR GLAZED AREAS: Where interior glazing is installed adjacent to a walking surface, the DIFFERENTIAL DEFLECTION of two adjacent unsupported sides shall not be greater than the thickness of the panels when a force of 50 pounds per linear foot is applied horizontally to one panel at a point up to 42 inches above the walking surface."

Thicknesses shown in TABLE 1 above WILL NOT MEET the BOCA code for adjacent panels not linked together by adequate silicone or permanent clips.

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The attached Appendix shows recommended minimum thicknesses of FULLY TEMPERED glass required to meet the BOCA code for panels that are not linked together to prevent differential deflection greater than the panel thickness.

Structural joints or permanently clipping adjacent panels do not add to the structural strength or rigidity of the assembly and do not permit reduction of the recommended thicknesses shown in TABLE 1.

Open narrow joints between butt glazed glass panels may catch or pinch fingers. The best preventative is to avoid open joints by filling them with silicone. An alternative is to install permanent clamps approximately every four feet to couple the adjoining panels together to prevent relative movement between panels. The gap between panels with unfilled joints should be such that fingers cannot be inserted and trapped.

APPENDIX

Recommended Minimum Thickness of Fully Tempered Glass to Meet BOCA Requirements (Section 2402.3) for Interior Partitions

Minimum recommended FULLY TEMPERED GLASS thickness					
Distance from walking surface to bottom edge of glass					
Panel Ht.	0"	6"	12"	18"	24"
7'	5/8"	5/8"	5/8"	1/2"	1/2"
8'	5/8"	5/8"	5/8"	5/8"	1/2"
9'	5/8"	5/8"	5/8"	5/8"	5/8"
10'	3/4"	3/4"	5/8"	5/8"	5/8"
11'	3/4"	3/4"	3/4"	5/8"	5/8"
12'	3/4"	3/4"	3/4"	3/4"	5/8"
13'	7/8"	3/4"	3/4"	3/4"	5/8"
14'	7/8"	7/8"	3/4"	3/4"	5/8"
15'	7/8"	7/8"	3/4"	3/4"	3/4"
16'	7/8"	7/8"	7/8"	3/4"	3/4"
17'	7/8"	7/8"	7/8"	3/4"	3/4"
18'	1"	7/8"	7/8"	3/4"	3/4"

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HISTORY TABLE		
ITEM	DATE	DESCRIPTION
Original Publication	May 1995	
Revision #1	1/15/2002	Revised and transferred to TD-114
Revision #2	9/9/2014	Updated header on pg. 3
Revision #3	2016-10-04	Updated to Vitro logo and format

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