thirsty RŠDAY

Understanding the Tech Tables:

NGA's Engineering Standards Manual & Heavy Glass Door Design Guide



Melissa Szotkowski Oldcastle BuildingEnvelope®

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Overview

This session will discuss two recently updated NGA documents, the Engineering Standards Manual and the Heavy Glass Door Design Guide. The primary focus of this session will be on the updated tables for minimum thickness guidelines for interior walls and heavy glass doors.

Learning Objectives

- Summarize the documents' contents
- Discover some of the more significant changes with respect to interior applications
- Describe the historical use of the documents and reasons for changes
- Explore examples of common applications



Engineering Standards Manual

"The purpose of the *Engineering Standards Manual* is to clarify the proper selection and use of heat-strengthened and fully tempered glass."

- Previously published in sections, most recent compiled version 2008
- Updated 2019



Available for Purchase:

https://members.glass.org/cvweb/cgi-bin/msascartdll.dll/ProductInfo?productcd=ENGINEERINGSTANDARD

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Contents - Engineering Standards Manual

Section 01

Fully Tempered Glass and Heat-Strengthened Glass Applications Section 02 - Specification No. 66-9-20 REV. #8 Specification for Heat-Strengthened or Fully Tempered Ceramic Enameled Spandrel Glass for Use in Building Window/Curtain Walls or Other Architectural Applications Section 02.1 - Specification No. 89-1-69 REV. #2 Specification for Environment Durability of Heat-Treated Spandrel Glass with Applied Opacifiers Section 03 - Specification No. 76-12-10a Rev. #3 Specification for Fully Tempered Glass for Uses Requiring Strength and Resistance to Temperature Section 04 - Specification No. 95-1-31 Rev#2 Specification for Screen Printed Ceramic Enameled Architectural Flat Glass Section 05 - Specification No. 65-5-13 Rev. #5 Specification for Fully Tempered Glass for Use in Appliances Section 06 - Specification No. 64-3-16a rev. #7 Specification for Fully Tempered Safety Glass for General Construction Usage: Consumer Products Safety Commission (CPSC 16 CFR 1201) Section 06.1 - Specification No. 64-3-16b Rev. #5 Specification for Fully Tempered Safety Glass for General Construction Usage: American National Standards Institute (ANSI Z97.1-2015) Section 06.2 - Specification No. 86-8-11 Rev#2 Specification for Fully Tempered Safety Glass for Overhead and Sloped Glazing Locations

Contents - Engineering Standards Manual

Section 07 - Specification No. 76-12-10b Rev. #3

Specification for Tempered Safety Glass for Use in Motor Vehicles and Motor Vehicle Equipment Operating On and Off Land Highways Section 07.1 - Specification No. 76-12-10b Rev. #3 Specification for Tempered Safety Glass for Use in Marine Craft and Marine Craft Equipment Section 08 Tempered Glass for Fireplace Screens (Precautions) Section 09 **Guidelines for Fully Tempered Interior Butt Glazed Fixed Glass Panels** Minimum Thickness Guidelines for Fully Tempered Glass used in two-side simply supported interior panels and mounted or restrained at top and bottom only Section 10 - Specification No. FB13-07 (2018) (formerly TD 04-1207) The Importance of Fabrication Prior to Heat-Treatment Appendix 1 thru Appendix 8 • Specification for Edge Stress Estimation Using Polarized Light (Strain Viewer) • Thermal Endurance Curves, Time vs. Temperature · Glossary of Terms Related to Heat-Treated Glass Specification References • Edge Finish Method for Measuring the Surface Stress of Heat-Strengthened and Fully Tempered Float Glass Using Optical Refraction Techniques · Proper Procedures for Cleaning Architectural Glass Products · Units of Measure NG

Heavy Glass Door Design Guide

"The purpose of this Design Guide is to provide authoritative technical information to designers and to offer some suggestions as to the proper applications of HG used in doors and entrances."

- Previously published in 1999
- Updated 2019



Available for Purchase:

https://members.glass.org/cvweb/cgi-bin/msascartdll.dll/ProductInfo?productcd=HEAVYGLASSDOOR

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Contents - Heavy Glass Door Design Guide

- I. General Information
 - Design Considerations
 - Interior Applications
 - Door Size Limitations
- II. Types of Entrances
- III. Types of Doors
- IV. Types of Glass
- V. Types of Hardware
 - Rail Types
 - Patches
- VI. Swinging Door Systems
- VII. Sliding Doors, Walls and Fronts
- VIII. Entrance Components
 - Locks
 - Handles
- IX. Metal Finishes
- X. Sidelites with Rails

- XI. Guidelines for Interior Swinging Door Sizes
- XII. Glass Transoms
- XIII. Glass Stabilizer Fins
- XIV. Structural Design of Interior Glass Entrance Systems
- XV. Structural Design of Exterior Glass Entrance Systems
- XVI. Application Guidelines for Fully Tempered and Tempered Laminated Glass Entrance Systems

XVII.Protection and Cleaning

Appendix I: Recommendations for Fully Tempered Interior Butt Glazed Fixed Glass Panels

Appendix II: Glossary of Terms



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What Changed?

Engineering Standards Manual (ESM)

Section 9 (used to be 11): Table 12

- Tables 1 and 2 were combined into one table Table 12
- Deflection criteria for glass linked with permanent clips or silicone in joints was updated and explicitly defined

Heavy Glass Door Design Guide (HGDDG)

Section XI: Table 4

- Laminated glass with patch fittings was allowed
- 5/8" glass was added



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Why Were They changed?

Engineering Standards Manual (ESM)

Section 9: Table 12

- Define applicable code considerations
- Provide clarification regarding calculations related to tabulated recommendations
- Reduce risk of mis-use of tables by combining into one table

Heavy Glass Door Design Guide (HGDDG)

Section XI: Table 4

- Provide guidance regarding acceptability of laminated glass
- Address limitations for use of 5/8" glass









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Examples – Understanding the Tech Tables



P-Style Door (Rails Top and Bottom) with Sidelites in Rails

Considerations

Door Height, Width and Weight for Rails and Floor Closer or COC - Table 4, HGDDG

Between Door and Sidelite:

Open Joints - Table 12, ESM, 1st and 3rd Columns

Between Panels of Adjacent Sidelites:

Open Joints or Linked Joints?

- Table 12, ESM, 1st and 3rd Columns for Open
- Table 12, ESM, 2nd and 4th Columns for Linked

Review Table 4 for Hardware Based on Selected Glass Thickness





Examples – Understanding the Tech Tables



Wall With Top Channel and Bottom Rail

Considerations

Between Panels of Adjacent Sidelites: Open Joints or Linked Joints?





