Technical Update

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Thirsty Thursdays – Monthly Webinars

- CAN/CGSB 12.1 - Safety Glazing
- EPDs and why you need it
- ASTM E1300 changes
- ASTM EMI standard
- Building Enclosure Testing
- ISC Blast Criteria
- Contracts: top 10 things to look for
- California AB262 and what it means to you
- Designing glass railings per IBC
- Daylighting and heath and wellness benefits of glass

[www.glasswebsite.com](http://www.glasswebsite.com)
[www.glass.org](http://www.glass.org)
Glass Informational Bulletins – published 2018
www.glasswebsite.com

• Heat-Treated Glass Surfaces Are Different
• Blast Mitigating Glazing
• Dynamic Glazing for High Performance Buildings
• Heat Soaking Testing
• One Optical Number - distortion
• Understanding Reflective Distortion in Mirror Installations
Glass Informational Bulletins – published 2018

www.glasswebsite.com

• Heat-treated Laminated Glass Exposed Edges
• Physical and Mechanical Properties of Architectural Glass
• Understanding Reflected Solar Energy of Glazing Systems in Buildings
• Unsupported Edges of IGUs (joint with IGMA)
Glass Informational Bulletins – published 2018
www.glasswebsite.com

• Human Benefits of Daylighting webpage (http://www.glasswebsite.com/daylighting.html)
  • Use of Daylighting
  • Summary of Human Benefits
  • Research Studies
  • Articles

• AIA Presentation on Multi-Cavity IGUs
Glass and Glazing Estimating Essentials
(formerly Blue Print Reading & Labor Estimating Course)
Technical Activities - ongoing

• Sealant and Setting Block Test Method
  • submitted to ASTM C24 for ASTM International standard
• Compatibility Testing of Glazing Materials Related to the Performance of PIB in IGUs (jointly with IGMA)
• Oversized IGUs
• School Security Task Group - working with several industries
• Fire-Rated Glazing Today AIA Presentation
• Fire-Rated Glazing Changes in IBC
Technical Activities - ongoing

- Thermal Stresses in Spandrel Glass
- Jumbo Glazing
- How to View Decorative Products in Interior and Exterior Applications
- Defining an Acceptable Color Variance for Decorative Glass
- Decorative Glazing “Reference” Manual
- Decorative Paint Coatings
Technical Activities - ongoing

• Compression of Interlayers
• Hurricane Product Substitution
• Laminated Glass Deflection Table
• Tornado Glazing
• Laminated Glass Use in Furniture
• Point-Supported Glass
Technical Activities - ongoing

• Blast Mitigating Glazing
• Point-Supported Glass Design
• Coated Glass AIA Presentation
• LEED Recycled Content for Glass
• Daylighting
Technical Activities - ongoing

• Project Managers Reference Manual – *to be published in 2018*
• Laminated Glazing Reference Manual – *to be published in 2018*
• Engineering Standards Manual – *to be published early 2019*
Engineering Standards Manual

Recommendations for Fully Tempered Interior Butt Glazed Fixed Glass Panels

- IBC Section 2403.4 states: "Interior Glazed Areas. Where interior glazing is installed adjacent to a walking surface, the differential deflection of two adjacent unsupported edges shall not be greater than the thickness of the panels when a force of 50 pounds per linear foot (plf) (730N/m) is applied horizontally to one panel at a point up to 42 inches (1067mm) above the walking surface."

- IBC Section 1607.15 states: “Interior walls and partitions. Interior walls and partitions that exceed 6 feet (1829 mm) in height, including their finish materials, shall have adequate strength and stiffness to resist the loads to which they are subjected but not less than a horizontal load of 5 psf (0.240 kN/m2)."
Engineering Standards Manual

Minimum Thickness Guidelines for Fully Tempered Interior Butt Glazed Fixed Glass Panels – 2-side supported interior mounted at top/bottom

<table>
<thead>
<tr>
<th>IBC 1607.14&lt;sup&gt;1,2&lt;/sup&gt;</th>
<th>IBC 1607.14&lt;sup&gt;1,3&lt;/sup&gt;</th>
<th>IBC 2403.4&lt;sup&gt;2&lt;/sup&gt;</th>
<th>IBC 2403.4&lt;sup&gt;3&lt;/sup&gt;</th>
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<tbody>
<tr>
<td>Load - 5 lb/sq.ft.</td>
<td>Load - 5 lb/sq.ft.</td>
<td>Load - 50 lb/ft</td>
<td>Load - 50 lb/ft</td>
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<td>Unsupported span from</td>
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<td>top to bottom of glass</td>
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<td>Over 1.5 m (5 ft) up to 1.8 m (6 ft)</td>
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<td>Over 1.8 m (6 ft) up to 2.1 m (7 ft)</td>
<td>Over 1.8 m (6 ft) up to 2.1 m (7 ft)</td>
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<td>Over 2.1 m (7 ft) up to 2.4 m (8 ft)</td>
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<td>Over 2.4 m (8 ft) up to 2.7 m (9 ft)</td>
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<td>Over 2.7 m (9 ft) up to 3 m (10 ft)</td>
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<td>Over 3 m (10 ft) up to 3.4 m (11 ft)</td>
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<td>Over 3.4 m (11 ft) up to 3.7 m (12 ft)</td>
<td>Over 3.4 m (11 ft) up to 3.7 m (12 ft)</td>
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<td>Over 3.7 m (12 ft) up to 4 m (13 ft)</td>
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when linked with silicone

NGA | GANA
Glass Association of North America
Advocacy – AB 262 – AB1817

• California AB 262 Background
  • On October 16, 2017 California enacted the Buy Clean California Act (AB 262) to address carbon emissions.
  • The new law is in response to Executive Order B-30-151.
  • State agencies must consider the Global Warming Potential (GWP) of “eligible materials” in their sourcing.
    • Carbon steel rebar
    • Structural steel
    • Mineral wool board insulation
    • Flat glass
  • Other western states are considering similar bills
  • Other impact categories may be added in the future
California AB262/AB1817 requirements

• By January 1, 2021 California Department of General Services (DGS) must establish a maximum acceptable GWP for each category of eligible materials.
  • DGS must set the maximum acceptable GWP at the industry average of facility-specific GWP emissions for each material category.
  • DGS can set the industry average by consulting Environmental Product Declarations (EPD) or consult LCAs or EPDs that have had critical review.

• On or after July 1, 2021 an awarding authority must require the successful bidder to submit a current Environmental Product Declaration (EPD) developed in accordance of specified standards (i.e., ISO 14044 and ISO 14025/EN 21930) for the eligible material.

• By January 1, 2022, and every 3 years thereafter, the law requires DGS to review the maximum acceptable GWP for each category of eligible materials, and authorizes DGS to adjust that number downward for any eligible material to reflect industry improvements.

• Public comments were due August 10, 2018 – See NGA’s comments
PCR, LCA, EPD participation

- **GANA PCR for Flat Glass: UN CPC 3711** *(2014)* — *expires March 2019*
- **Product Category Rule (PCR) for Processed Glass** *(2016)*
  - Fabricators – interested in working on an industry wide EDP?
- **Cradle to Gate Window Product Category Rule** *(2015)*
ASTM International participation

• Committee C 14 on Glass and Glass Products

  • C1048 - 12e1 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass – ballot comments
  • C1503-08(2013) Standard Specification for Silvered Flat Glass Mirror – will go out for ballot for 5 year review
ASTM International participation

• Committee C 14 on Glass and Glass Products
  • C1172- 2014 Standard Specification for Laminated Architectural Flat Glass – will go out for ballot for 5 year review
  • C1651-11 Standard Test Method for Measurement of Roll Wave Optical Distortion in Heat-Treated Flat Glass – being revised
ASTM International participation

• Committee C 14 on Glass and Glass Products
  • WK47853 - New Test Method for Bird Collision Deterrence Material Threat Factor
    • The purpose of this standard is to determine a material threat factor score (MTFS) for a sample material via a binomial choice protocol. Birds are given the perceived option of exiting a tunnel, either through a transparent, control pane or a test pane. The birds behaviors flying towards the test pane or avoiding the test pane determine the score.
ASTM International participation

• Committee C 14 on Glass and Glass Products
  • WK58123  Cleaning Architectural Flat Glass
    • Research at Penn State continues
  
• WK64418 – Measuring Anisotropy
  • Measuring anisotropy in architectural glass.
ASTM International participation

• Committee E06 on Performance of Buildings

• E1300 –16 - Standard Practice for Determining Load Resistance of Glass in Buildings –new proposals on deflection appendix; pullout; ceramic enamel, material properties - 4 – ballots
ASTM International participation

• Committee E06 on Performance of Buildings
  • E2431-12 Standard Practice for Determining the Resistance of Single Glazed Annealed Architectural Flat Glass to Thermal Loadings – being revised

• WK63025 * Design and Performance of Laminated Glass for use in the Construction of Aquariums and Swimming Pool
  • This practice addresses elements related to load-bearing laminated glass used in the construction of swimming pools and aquariums. This standard includes performance design, and safe behavior considerations. It addresses the characteristics unique to glass and laminated glass.
ASTM International participation

• Committee E06 on Performance of Buildings

• WK59324 * Design of Glass Railings and Guards and Balustrades
  • This design guide specifies requirements to be followed in the design of permanent railing systems, guards and balustrades installed in and for assembly, commercial, educational, industrial, institutional, stadiums, recreational, and residential buildings and other structures such as towers or elevated platforms.

• WK17797 - Skylight Human Impact Resistance
  • this working group have decided on an impact load of 300lb at a height of 3 feet with a tapered sand bag. Just wrapped up ballots – a few negatives to discuss
ASTM International participation

• Committee E06 on Performance of Buildings

• E1996-17 Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes - discussions on changing the pass/fail criteria

• WK17797 - Skylight Human Impact Resistance
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ASTM International participation

• Committee E06 on Performance of Buildings

• WK37764 - New Guide for Structural Use of Glass in Buildings
  • This guide describes procedures to determine the stability and load resistance (LR) of specified glass types, for reliable usage of glass in structural applications, where the glass is supporting other elements or is required to provide safety restraint to live loads. Currently, the group is working on an initial draft.
ASTM International participation

• Committee F12 on Security Systems and Equipment

• F3006-13 Standard Specification for Ball Drop Impact Resistance of Laminated Architectural Flat Glazing – 5 year update

• F3007-13 Standard Test Method for Ball Drop Impact Resistance of Laminated Architectural Flat Glass – 5 year update
International Standards Organization (ISO) participation

• ISO 20657 - Glass in building — Heat soaked tempered soda lime silicate safety glass.
  • Published 2017 – includes the Batch Type Heat Soaking Test and an In-line Heat Soaking Test.
    • in-line heat soak process - heat soak process which follows immediately after the quenching process whereby the glass temperature is directly reduced from quenching to the heat soak temperature in an in-line heat soak oven.
International Standards Organization (ISO) participation

• ISO/TC 160/SC 1/WG 2 “Toughened glass”
  • Ceramic Enamel – durability

• ISO/TC 160/SC 2/WG 1 “Glass Strength”
  • Adding 2mm glass

• ISO/TC 160/SC 2/WG 7 “Security”
  • Forced entry; severe wind
  • New ballistic
Upcoming Meetings

• Annual Conference
  • January 22-24, 2019
  • Naples Grand Beach Resort, Naples, FL
  • Registration OPEN!

• BEC Conference
  • March 3-5, 2019
  • Caesars Palace, Las Vegas, NV
Thank you Volunteers!

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