

GUIDE SPECIFICATION

Manufacturer:
Polytronix, Inc.
705 N. Plano Road
Richardson, Texas 75081
972-238-7045 voice
214-466-1280 facsimile
www.polytronixglass.com

SECTION 088800 SWITCHABLE PRIVACY GLASS

This guide specification has been prepared by Polytronix, Inc. as an aid to specifiers in preparing written construction documents for electrically charged switchable translucent privacy glass (Polyvision™), utilizing PDLC (Polymer-Dispersed Liquid Crystal) technology.

Common applications for switchable privacy glass include: Conference rooms, private offices, clinics, patient room view windows and ICU/CCU sliding doors in healthcare applications, bath/shower enclosures, security windows, skylights, and as the inner pane of insulated exterior glazing.

Polytronix products also include POLYMAGIC™, composed of laminated glass with LED light sources connected using a wireless film, as well as PolyDigit™, which allows a changeable streaming message to be programmed into the LED light sources.

Edit entire master to suit project requirements. Modify or add items as necessary. Delete items which are not applicable. Words and sentences within brackets [_____] reflect a choice to be made regarding inclusion or exclusion of a particular item or statement. Editor notes to guide the specifier are included between lines of asterisks to assist in choices to be made. Remove these notes before final publishing of the specification.

This guide specification is written around the Construction Specifications Institute (CSI), Section Format standards, and references to section names and numbers are based on MasterFormat 2012.

For specification assistance on specific product applications, please contact our offices above.

Polytronix reserves the right to modify these guide specifications at any time. Updates to this guide specification will be posted to our web site and as they occur. Polytronix makes no expressed or implied warranties regarding content, errors, or omissions in the information presented.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide specialty glazing and glazing accessories where indicated on the drawings, as specified herein, and as needed for a complete and proper installation.
- B. Related Documents: General Conditions, Supplementary Conditions, and Sections in Division 01 of these specifications apply to the work of this section.

Retain sections below that are related to the work for the specific project.

C. Related Sections:

1. [079200 - Joint Sealants]
2. [081113 - Hollow Metal Doors & Frames]
3. [081216 - Interior Aluminum Door and Window Frames]
4. [081416 - Flush Wood Doors]
5. [084113 - Aluminum Entrances and Storefronts]
6. [084126 - All Glass Entrances and Storefronts]
7. [084229 - Automatic Entrance Doors]
8. [084243 - ICU/CCU Sliding Doors]
9. [084413 - Glazed Aluminum Curtain walls]
10. [085123 - Steel Windows and Storefront (Hollow Metal)]
11. [086300 - Metal Framed Skylights]
12. [088000 - Glazing]
13. Division 26 - Electrical

1.2 QUALITY ASSURANCE

A. Provide glazed units complying with the following as applicable to specific selections made in PART 2:

1. Standards
 - a. FGMA (Flat Glass Marketing Association)
 - b. IGMA (Insulated Glass Manufacturers Association)
2. Certification/Ratings
 - a. Safety Glazing
 - 1) CPSC (Consumer Products Safety Commission) 16 CFR 1201 Cat II
 - 2) ANSI (American National Standards Institute) Z97.1-2004 ANSI SAE Z26.1-1996 (safety glazing for motor vehicles)
 - b. Sound Control
 - 1) ASTM International (American Society for Testing and Materials) E90-83 (sound transmission class), E90-87 (analysis)
 - 2) E413-87 (certification)
 - 3) Sound Control Data

Overall Thickness	Construction	STC Value
5/16" (8mm)	1/8" x 0.060* x 1/8"	35
7/16" (11mm)	3/16" x 0.060* x 3/16"	37
9/16" (14mm)	1/4" x 0.060* x 1/4"	39
1" (25mm)	3/16" x 1/2" airspace x 5/16" laminate	39

* PVB inner layer is composed of two layers of 0.030 inch material to form the 0.060 thickness.

3. Others
 - a. IGCC (Insulated Glass Certification Council) #681 per ASTM guidelines set forth in E-773 and E-774 and certified to level CBA
 - b. ASTM C-920 (elastomeric joint sealants)
 - c. ASTM C-162 (standard terminology of glass and glass products)
 - d. ASTM C-1036 (flat glass)
 - e. ASTM C-1048 (heat-treated flat glass)
 - f. ASTM C-1172 (laminated architectural flat glass)
 - g. ASTM C-1422 (chemically-strengthened flat glass)
 - h. ASTM C-1464 (bent glass)
 - i. ASTM D1003 (haze and luminous transmittance of transparent plastics)
 - j. ASTM E2190 (specification for insulating glass units)
 - k. ASTM E2188 (accelerated weathering)
 - l. ASTM E2189 (fog resistance)
 - m. ASTM F-1637 (standard practice for safe walking surfaces)
 - n. ASTM F-1646 (terminology relating to safety and traction for footwear)

- 1.3 SUBMITTALS
 - A. Comply with pertinent provisions of Section 013300.
 - B. Product data:
 - 1. Materials list of items proposed to be provided.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Manufacturers' recommended installation procedures.
 - C. Samples: Accompanying the above product data, submit:
 - 1. Samples of each type of gasket proposed to be used.
 - 2. Samples of each type of sealant proposed to be used, tested for each substrate involved, (including certification by sealant supplier if organic coating involved) proving compliance with manufacturer's recommended sealants for use with specialty glass.

- 1.4 PRODUCT HANDLING
 - A. Comply with pertinent provisions of Section 016000 and manufacturer's recommendations.
 - B. Follow strict glass handling and storage recommendations of referenced standards, including any special instructions from the specialty glass manufacturer.

 While manufacturer warrants products against defects in materials, expected life of installation, with proper maintenance, is in excess of 10 years.

- 1.5 WARRANTIES
 - A. Provide 3-year limited manufacturer's warranty against electrical failure and delamination of materials, including failure in workmanship.

PART 2 - PRODUCTS

- 2.1 SWITCHABLE PRIVACY GLASS
 - A. Acceptable Manufacturer:
 - 1. Polytronix, Inc., Richardson, Texas (www.polytronixglass.com)
 - 2. Substitutions: Submit in accordance with Section 012500.
 - B. General
 - 1. All glass complies with ASTM C-1036-06.
 - 2. Provide the type and thickness shown on the Drawings or specified herein.
 - 3. Panels will not be given a permanently etched safety certification label unless specifically directed by the Architect.
 - C. Materials:
 - 1. Float glass-clear: Type 1, Class 1, Quality q3, ultraclear glass equal to
 - a. Pilkington North America; Optiwhite.
 - b. PPG Industries, Inc.; Starphire.

 Annealed glass with manufacturer's standard PVB inner layers normally qualify as safety glass, but heat strengthening or fully tempering are also available if code requires or is desirable for specific applications.

- 2. Tempered glass: Comply with ASTM C-1048 and Z976.1-84 for [heat strengthened] [fully tempered] glass.
 - 3. Lamination Layers: Two layers of 0.030 PVB (polyvinyl butyral).
 - 4. Switchable Film: Manufacturer's patented PDLC sheet, composed of a polymer matrix and liquid crystals, with electrical wiring connected to a concealed transformer.
- D. Laminated Glass Fabrication:

 Select color of glass in paragraph below.

1. Provide [clear] [bronze] [gray] [green] tinted glass consisting of an outer face and an inner face of [float] [heat-strengthened] [fully tempered] glass laminated under heat and pressure to a proprietary liquid crystal film.
2. Panels with widths exceeding maximum width of 60" will be manufactured with two butt-jointed liquid crystal films laminated into a single panel.
3. Glass Optical performance:
 - a. Transmission (visible): Approximately 75%.
 - b. View Angle: Approximately 150 degrees.
 - c. Scattering Effectiveness: Approximately 1 inch.
4. Fabricated Glass Thickness: Maximum Glass Sizes (for both 2 and 4 sided framing):
 - a. 5/16 inch thickness: 48 x 72 inches.
 - b. 7/16 inch thickness: 48 x 108 inches.
 - c. 9/16 inch thickness: 60 x 120 inches.

 Retain paragraph below for exterior insulated glass applications.

5. [Exterior insulated glass units will be composed of 3/16 inch fully tempered outer light + 3/8 inch air space + 7/16 inch laminated switchable privacy glass.]
- F. Provide other material, not specifically described but required for a complete and proper installation, as specified or selected by the Contractor subject to the approval of the Architect.

2.2 ELECTRICAL DEVICES AND CONNECTIONS

- A. Power Supply/Transformer:
1. For each fixed panel installation, provide a separate power supply/transformer for each 60 square feet or fraction thereof or panel surface. Power source of 110 VAC, 60 Hz electricity must be supplied from a minimum 15A GFI circuit (20A dedicated circuit recommended). Connect power supply/transformer to an accessible standard double junction box connected to ground continuity.
 2. Connect not more than 18 panels to one 20A circuit.
- B. Wall Switch: Standard single pole switch.
- C. Timer: To meet Limited Warranty requirements, a 24-hour timer IS HIGHLY RECOMMENDED to be installed for each power supply/transformer OR group of power supplies/transformers to insure that the privacy glass SHALL BE in the "OFF" position (Opaque) for a minimum of 4 hours every 24 hours. If a timer is not used, switching ON and OFF daily is encouraged to ensure that the panels remain functional.

 Coordinate specifications with power transfer hinges and sliding devices specified in other sections.

- D. For all hinged and sliding door panel applications, the power supply should be located near the hinge side of door/window jamb and all installation is to conform to manufacturer's instructions.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions are critical to the timely and proper completion of this work. Do not proceed until unsatisfactory conditions are corrected.
- B. After preparation of the glazing system, clean glazing channels, stops and rabbets to receive glazing materials, making free from obstructions and deleterious substances which might impair the work.
1. Remove protective coating which might fall in adhesion or interfere with bond of sealants.
 2. Comply with manufacturers' instructions for final wiping of surfaces immediately prior to application of primer and glazing compounds or tapes. USE ONLY NEUTRAL CURE SILICONES. DO NOT USE ACETIC SILICONES.

3.2 INSTALLATION

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of these Sections.
- B. Inspect each piece of glass immediately prior to start of installation.
 - 1. Do not install items which are improperly sized, have damaged edges, or are scratched, abraded, or deficient in any other manner.
 - 2. Do not remove labels that were provided by the glass supplier from the glass until so directed.
 - 3. Adhere to all manufacturers' installation instructions.
- C. Locate sill setting blocks of standard width and thickness at quarter points of all glass lights unless otherwise recommended by manufacturer or supplier.
 - 1. Use blocks of proper durometer, size and thickness to support the glass in accordance with the manufacturers' recommendations.
 - 2. Glass lap and edge clearances must be provided according to pertinent codes and standards of manufacturers.
- D. Set glass in a manner which produces the greatest possible degree of uniformity in appearance.
 - 1. Installations of the glass in dynamic frames such as operable windows and sliding doors must meet architectural specifications in section 088000.
 - 2. Glazing to the exterior and wet interior conditions must be wet-sealed and impervious to moisture with provisions to allow for weeping of condensation that may infiltrate the system.
 - 3. Pressure glazing systems without positive positioning stops are not to be used with this glass.
 - 4. Place electrical connections properly to allow access by electrician.
 - 5. Electrical connections must exit at the head condition of any framing system in wet environment applications.
- E. Cut and seal the joints of glazing gaskets in accordance with the manufacturers' recommendations, provide watertight and airtight seal at corners and other locations where joints are required.
- F. Special Glazing Requirements
 - 1. Interior Butt Glazing
 - a. Panels can be butt glazed using a minimum 7/16" thickness panel.
 - b. A standard neutral cure structural silicone sealant may be used to close the joint. A minimum of a 1/4" separation between panels is recommended.
 - 2. Swinging and Sliding Doors:
 - a. Door package will be supplied complete with door header, door leaf, power transfer device, and all other hardware.

3.3 PROTECTION

- A. Protect glass from breakage after installation by promptly installing streamers or ribbons, suitably attached to the framing and held free from the glass. Do not apply warning markings, streamers, ribbons, or other items directly to the glass except as specifically allowed by the manufacturer.
- B. Note: Windblown objects, welding sparks, or other material applied to the glass surface during construction may cause irreversible damage.

3.4 CLEANING

- A. Clean glass prior to substantial completion. Abrasive cleaners should never be used, particularly when the surface to be cleaned has a reflective coating. Clean with a mild soap or very weak acid (vinegar) applied with a soft, clean, grit-free cloth. Rinse glass and framing immediately with water and the excess should be squeezed away from the glass, taking care not to contact the glass with any metal parts. Wipe framing dry.

END OF SECTION