SECTION 08810
PART 1 GENERAL

1.1 SECTION INCLUDES
High-performance architectural glass
High-performance architectural insulating glass

1.2 RELATED SECTIONS
Section 08400 – Entrances and Storefronts: Exterior Entrances and Storefront Section 08500 – Windows: Exterior Windows
Section 08900 – Glazed Curtainwall: Exterior Curtainwall

1.3 REFERENCES
ANSI Z97.1 – American National Standard for Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test

ASCE 7 – Minimum Design Loads for Buildings and Other Structures

ASTM International (ASTM):
- ASTM C 162 – Standard Terminology of Glass and Glass Products
- ASTM C 1036 – Standard Specification for Flat Glass
- ASTM C 1048 – Standard Specification for Heat-Treated Flat Glass — Kind HS, Kind FT Coated and Uncoated Glass
- ASTM C 1172 – Standard Specification for Laminated Architectural Flat Glass
- ASTM C 1376 – Standard Specification for Pyrolitic and Vacuum Deposition Coatings on Flat Glass
- ASTM E 2188 – Standard Test Method for Insulating Glass Unit Performance
- ASTM E 2189 – Standard Test Method for Testing Resistance to Fogging in Insulating Glass Units
- ASTM E 2190 – Standard Specification for Insulating Glass Unit Performance and Evaluation

1.4 DEFINITIONS
Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications

Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036

Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or other specified gas

Sealed Insulating Glass Unit Surface Designations:
- Surface 1 – Exterior surface of the outer glass lite
- Surface 2 – Interspace surface of the outer glass lite
- Surface 3 – Interspace surface of the inner glass lite
- Surface 4 – Interior surface of the inner glass lite

1.5 PERFORMANCE REQUIREMENTS

General: Provide glass capable of withstanding thermal movement and wind and impact loads (where applicable) as specified in the following paragraph:

Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat-treated) required to meet or exceed the following criteria:

Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:

Design Wind Loads: Determine design wind loads applicable to the Project according to ASCE 7, Minimum Design Loads for Buildings and Other Structures: Section 6.5, Method 2–Analytical Procedure, based on mean roof heights above grade indicated on Drawings.

Basic Wind Speed:_____mph
Importance Factor: _____
Exposure Category: _____

Specified Design Snow Loads: As indicated on Drawings, but not less than snow loads applicable to Project as required by ASCE 7, Minimum Design Loads for Buildings and Other Structures: Section 7.0, Snow Loads

Probability of Breakage for Vertical Glazing:_____lites per 1000 for lites set vertically or not more than 15 degrees off vertical

Wind Load Duration: Short duration, as defined in ASTM E 1300 or_____seconds or less

Probability of Breakage for Sloped Glazing:_____per 1000 for lites set greater than 15 degrees off vertical
Wind Load Duration: Short duration, as defined in ASTM E 1300 or_____seconds or less
Snow Load Duration: Long duration, as defined in ASTM E 1300 or_____days

Maximum Lateral Deflection: For the following types of glass supported on all 4 edges, provide thickness required that limits center deflection at design wind pressure to_____times the short side length or 1 inch, whichever is less.

For monolithic-glass lites heat-treated to resist wind loads
For insulating glass

Thermal Movements: Provide glazing that allows for thermal movements resulting from ambient and surface temperatures changes acting on glass framing members and glazing components.

Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:

For monolithic-glass lites, properties are based on units with lites 1/4 inch (6.0 mm) thick.
For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
Center-of-Glass Values: Based on using LBNL WINDOW 6.3 computer program for the following methodologies:
U-Factors: NFRC 100 expressed as Btu/sq. ft. per h per degree F
Solar Heat Gain Coefficient: NFRC 200
Solar Optical Properties: NFRC 30

1.6 SUBMITTALS

Submit under provisions of Section 01300

Product Data: For each glass product and glazing material indicated

Verification Samples: For the following products, in the form of 12-inch (305 mm) square samples for insulating glass units

Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.

Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

For solar-control low-e-coated glass, provide documentation demonstrating that fabricator of coated glass is certified by coating manufacturer.

Qualification Data: For installers

Product Test Reports: For each of the following types of glazing products:

Tinted float glass
Coated float glass
Insulating glass

Warranties: Special warranties specified in this Section.

1.7 QUALITY ASSURANCE

Sustainable Design Certification: Glass shall be Cradle to Cradle Certified™, minimum Silver Level, Cradle to Cradle Innovation Institute.

Fabricator Qualifications: *Vitro Certified*™ Network, as acceptable to the manufacturer

Installer Qualifications: An experienced installer who has completed glazing similar in material, design and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association Glazier Certification Program as Level-2 (Senior Glaziers) or Level-3 (Master Glaziers).

Source Limitations for Glass: Obtain the following through one source from a single manufacturer for each glass type: clear float glass, coated float glass and insulating glass.

Glass Product Testing: Obtain glass test results for product test reports in Submittals Article from a qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

Glazing Publications: Comply with published recommendations of glass product manufacturers and industry organizations, including but not limited to those below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.

IGMA Publication for Insulating Glass: IGMA TM-3000, Glazing Guidelines for Sealed Insulating Glass Units GANA Publications: Laminated Glazing Reference Manual; Glazing Manual
AAMA: Sloped Glazing Guidelines
IGMA: Guidelines for Sloped Glazing

Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the following testing and inspecting agency:

Insulating Glass Certification Council
Associated Laboratories, Inc.
Insulating Glass Manufacturers Alliance

Safety Glazing Products: Comply with testing requirements in 16 CFR 1201 and, Insulating Glass Manufacturers Alliance ANSI Z97.1.

Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.

Lites more than 9 square feet (sf) (0.84 sq. m) in area are required to be Category II materials

Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sf in area, provide glazing products that comply with Category II materials, and for lites 9 sf or less in area, provide glazing products that comply with Category I or II materials.

1.8 DELIVERY, STORAGE, AND HANDLING

Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

For insulating glass units that will be exposed to substantial altitude changes, comply with insulating glass manufacturer's written recommendations for venting and sealing to avoid hermetic seal ruptures.

1.9 WARRANTY

Manufacturer's Warranty for Coated-Glass Products: Manufacturer's standard form, made out to the glass fabricator, in which the coated glass manufacturer agrees to replace coated glass units that deteriorate during normal use within the specified warranty period. Deterioration of the coated glass is defined as peeling and/or cracking, or discoloration that is not attributed to glass breakage, seal failure, improper installation or cleaning and maintenance that is contrary to the manufacturer's written instructions.

Warranty Period:_____years from date of Substantial Completion

Manufacturer's Warranty on Insulating Glass: Manufacturer's standard form in which the insulating glass unit manufacturer agrees to replace insulating glass units that deteriorate during normal use within the specified warranty period. Deterioration of insulating glass units is defined as an obstruction of vision by dust, moisture or a film on the interior surfaces of the glass caused by a failure of the hermetic seal that is not attributed to glass breakage, improper installation or cleaning and maintenance that is contrary to the manufacturer's written instructions.

Warranty Period:_____years from date of Substantial Completion

Manufacturer's Warranty on Laminated Glass: Manufacturer's standard form in which the laminated glass manufacturer agrees to replace laminated glass units that deteriorate during normal use within the specified warranty period. Deterioration of laminated glass is defined as defects, such as discoloration, edge separation or blemishes exceeding those allowed by ASTM C 1172 that are not attributed to glass breakage, improper installation or cleaning and maintenance that is contrary to the manufacturer's written instructions.

Warranty Period:_____years from date of Substantial Completion

PART 2 PRODUCTS

2.1 MANUFACTURERS

Acceptable Manufacturer: Vitro Architectural Glass, Vitro Glass Technology Center, 400 Guys Run Rd., Cheswick, PA 15024. ASD. Toll Free Tel: (800) 377-5267. Fax: (800) 367-2986.
Web: http://www.vitroglazings.com

Substitutions: Not permitted

Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 GLASS PRODUCTS

Annealed Float Glass: ASTM C 1036, Type I (transparent flat glass), Quality-Q3; of class indicated

Heat-Treated Float Glass: ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated

Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed, unless otherwise indicated

Provide Kind HS (heat-strengthened) float glass in place of annealed float glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in Part 1 Performance Requirements Article.

For uncoated glass, comply with requirements for Condition A.

For coated vision glass, comply with requirements for Condition C (other uncoated glass).

Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS (heat-strengthened) float glass where safety glass is indicated or required.

Sputter-Coated Float Glass: ASTM C 1376, float glass with metallic-oxide or -nitride coating deposited by vacuum deposition process after manufacture and complying with other requirements specified

Tempered Patterned Glass: ASTM C 1048, Kind FT (fully tempered), Type II (patterned flat glass), Class 1 (clear), Form 3 (patterned), and of quality, finish and pattern specified.

Insulating Glass Units, General: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 2190 and with requirements specified in this Article and in Part 2 Insulating-Glass Units Article

Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in Part 1 Performance Requirements Article.

Provide Kind FT (fully tempered) glass lites where safety glass is indicated or required.

Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated for insulating glass units are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.

Sealing System: Comply with requirements in Section 07920 – Joint Sealants. Dual seal, with primary and secondary sealants of polyisobutylene and silicone.

Spacer Specifications: Manufacturer's standard spacer material and construction complying with the following requirements:

Spacer Material: Aluminum with mill or clear anodic finish

Desiccant: Molecular sieve or silica gel, or blend of both

Corner Construction: Manufacturer's standard corner construction

2.3 FABRICATION OF GLAZING UNITS

Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

Type: Clear Insulating Glass
Clear, low-reflective exterior appearance
Clear + Clear by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
79%	0.70	0.81	15%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) Clear glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Uncoated Ultra-Clear Float Glass
Ultra-clear, low-reflective exterior appearance
Starphire ® **+ *Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
84%	0.82	0.94	15%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Starphire*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass

Type: Uncoated Tinted Insulating Glass
Light-green, low-reflective exterior appearance
Solexia ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
69%	0.50	0.57	13%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Uncoated Tinted Insulating Glass
Emerald-green, low-reflective exterior appearance
Atlantica ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
60%	0.41	0.47	11%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Atlantica*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Uncoated Tinted Insulating Glass
Aqua-blue, low-reflective exterior appearance
Azuria ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
61%	0.39	0.45	11%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Uncoated Tinted Insulating Glass
Warm-bronze, low-reflective exterior appearance
Solarbronze® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
47%	0.51	0.59	8%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Uncoated Tinted Insulating Glass
Cool light-gray, low reflective exterior appearance
Solargray ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
40%	0.46	0.53	7%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solargray*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Uncoated Tinted Insulating Glass
Dark-gray, low-reflective exterior appearance
Graylite ® **II + Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
8%	0.22	0.25	4%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Graylite*** **II** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Uncoated Tinted Insulating Glass
Light sky-blue, low-reflective exterior appearance
Solarblue ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
50%	0.49	0.56	9%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Uncoated Tinted Insulating Glass
Dark-blue, low-reflective exterior appearance
Pacifica ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
38%	0.36	0.41	7%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Uncoated Tinted Insulating Glass
Light-gray, ultra-neutral low-reflective exterior appearance
Optigray ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
56%	0.52	0.60	10%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Optigray*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Clear Insulating Glass
Clear, low-reflective exterior appearance
Sungate ® **400 (2) Clear + Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
76%	0.60	0.69	14%	0.32	0.31

Insulating Glass Unit Construction: 1/4 inch (6mm) Clear glass, ***Sungate*** **400** (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Clear Insulating Glass
Clear, low-reflective exterior appearance
Sungate ® **400 (2)** ***Starphire*** ® **+** ***Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
80%	0.68	0.78	14%	0.32	0.31

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Starphire*** glass, ***Sungate*** **400** (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass

Type: Low-E Tinted Insulating Glass
Clear, low-reflective exterior appearance
Clear + ***Sungate*** ® **400 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
76%	0.63	0.73	14%	0.32	0.31

Insulating Glass Unit Construction: 1/4 inch (6mm) Clear glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Sungate*** **400** (sputtered) coated on third surface (3)

Type: Low-E Tinted Insulating Glass
Light-green, low-reflective exterior appearance
Solexia ® **+** ***Sungate*** ® **400 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
66%	0.44	0.50	11%	0.32	0.31

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Sungate*** **400** (sputtered) coated on third surface (3)

Type: Low-E Tinted Insulating Glass
Emerald-green, low-reflective exterior appearance
Atlantica ® **+** ***Sungate*** ® **400 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
58%	0.35	0.40	10%	0.32	0.31

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Atlantica*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Sungate*** **400** (sputtered) coated on third surface (3)

Type: Low-E Tinted Insulating Glass
Aqua-blue, low-reflective exterior appearance
Azuria ® **+ *Sungate*** ® **400 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
59%	0.34	0.39	10%	0.32	0.31

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Sungate* 400** (sputtered) coated on third surface (3)

Type: Low-E Tinted Insulating Glass
Warm-bronze, low-reflective exterior appearance
Solarbronze ® **+ *Sungate*** ® **400 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
46%	0.44	0.50	8%	0.32	0.31

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Sungate* 400** (sputtered) coated on third surface (3)

Type: Low-E Tinted Insulating Glass
Cool light-gray, low-reflective exterior appearance
Solargray ® **+ *Sungate*** ® **400 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
38%	0.39	0.44	7%	0.32	0.31

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solargray*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Sungate* 400** (sputtered) coated on third surface (3)

Type: Low-E Tinted Insulating Glass
Dark-gray, low-reflective exterior appearance
Graylite ® **II + *Sungate*** ® **400 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
8%	0.15	0.17	4%	0.32	0.31

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Graylite* II** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Sungate* 400** (sputtered) coated on third surface (3)

Type: Low-E Tinted Insulating Glass
Light sky-blue, low-reflective exterior appearance
Solarblue ® **+ *Sungate*** ® **400 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
48%	0.42	0.49	8%	0.32	0.31

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Soalrblue*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Sungate* 400** (sputtered) coated on third surface (3)

Type: Low-E Tinted Insulating Glass
Deep-blue, low-reflective exterior appearance
Pacifica ® **+** ***Sungate*** ® **400 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
37%	0.30	0.34	7%	0.32	0.31

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Sungate*** **400** (sputtered) coated on third surface (3)

Type: Low-E Clear Insulating Glass
Light-gray, ultra-neutral low-reflective exterior appearance
Optigray ® **Clear +** ***Sungate*** ® **400 Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
54%	0.46	0.52	9%	0.32	0.231

Insulating Glass Unit Construction: 1/4 inch (6mm) Clear glass, ***Optigray*** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Clear Insulating Glass
Clear, low-reflective exterior appearance
Solarban ® **60 (2) Clear + Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
70%	0.39	0.45	11%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) Clear glass, ***Solarban*** **60** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear (transparent) float glass

Type: Ultra-Clear Low-E Insulating Glass
Ultra-clear, low-reflective exterior appearance
Solarban ® **60 (2)** ***Starphire*** ® **+** ***Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
74%	0.41	0.48	11%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Starphire*** glass, ***Solarban*** **60** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass

Type: Low-E Tinted Insulating Glass
Light-green, low-reflective exterior appearance
Solarban ® **60 (2)** ***Solexia*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
61%	0.32	0.37	9%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass, ***Solarban*** **60** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Emerald-green, low-reflective exterior appearance
Solarban ® **60 (2)** ***Atlantica*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
53%	0.27	0.32	8%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Atlantica*** glass, ***Solarban* 60** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Aqua-blue, low-reflective exterior appearance
Solarban ® **60 (2)** ***Azuria*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
54%	0.28	0.32	8%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Solarban* 60** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Cool light-gray, low-reflective exterior appearance
Solarban ® **60 (2)** ***Solargray*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
35%	0.25	0.29	6%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solargray*** glass, ***Solarban* 60** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Warm-bronze, low-reflective exterior appearance
Solarban ® **60 (2)** ***Solarbronze*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
42%	0.28	0.32	7%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass, ***Solarban* 60** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light sky-blue, low-reflective exterior appearance
Solarban ® **60 (2)** ***Solarblue*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
45%	0.28	0.33	7%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass, ***Solarban* 60** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Deep-blue, low-reflective exterior appearance
Solarban ® **60 (2)** ***Pacifica*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
34%	0.22	0.26	6%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass, ***Solarban*** **60** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light-gray, ultra-neutral low-reflective exterior appearance
Solarban ® **60 (2)** ***Optigray*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
50%	0.30	0.35	8%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Optigray*** glass, ***Solarban*** **60** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light-green, low-reflective exterior appearance
Solexia ® **+** ***Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
61%	0.37	0.42	10%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Emerald-green, low-reflective exterior appearance
Atlantica ® **+** ***Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
53%	0.31	0.36	9%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Atlantica*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Aqua-blue, low-reflective exterior appearance
Azuria ® **+** ***Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
54%	0.31	0.36	9%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: low-E Tinted Insulating Glass
Warm-bronze, low-reflective exterior appearance
Solarbronze ® **+ *Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
42%	0.32	0.37	7%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Cool, light-gray, low-reflective exterior appearance
Solargray ® **+ *Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
35%	0.29	0.33	7%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solargray*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Dark-gray, low-reflective exterior appearance
Graylite ® **II + *Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
7%	0.13	0.14	4%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Graylite*** **II** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Light sky-blue, low-reflective exterior appearance
Solarblue ® **+ *Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
45%	0.33	0.38	7%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Deep-blue, low-reflective exterior appearance
Pacifica ® **+ *Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
34%	0.25	0.29	6%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Light-gray, ultra-neutral low-reflective exterior appearance
Optigray ® **+ *Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
50%	0.35	0.40	8%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Optigray*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban* 60** solar control (sputtered) on third surface (3)

Type: Low-E Clear Insulating Glass
Clear, low-reflective exterior appearance
Solarban ® **67 (2) Clear + Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
54%	0.29	0.33	19%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) Clear glass, ***Solarban* 67** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Ultra-Clear Low-E Insulating Glass
Ultra-clear, low-reflective exterior appearance
Solarban ® **67 (2) *Starphire*** ® **+ *Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
57%	0.30	0.34	20%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Starphire*** glass, ***Solarban* 67** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass

Type: Low-E Tinted Insulating Glass
Light-green, low-reflective exterior appearance
Solarban ® **67 (2) *Solexia*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
47%	0.25	0.29	16%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass, ***Solarban* 67** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Emerald-green, low-reflective exterior appearance
Solarban ® **67 (2) *Atlantica*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
41%	0.22	0.26	13%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Atlantica*** glass, ***Solarban* 67** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Aqua-blue, low-reflective exterior appearance
Solarban ® **67 (2)** ***Azuria*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
42%	0.23	0.26	13%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Solarban* 67** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Cool light-gray, low-reflective exterior appearance
Solarban ® **67 (2)** ***Solargray*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
27%	0.20	0.23	8%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solargray*** ® glass, ***Solarban* 67** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Warm-bronze, low-reflective exterior appearance
Solarban ® **67 (2)** ***Solarbronze*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
32%	0.22	0.25	10%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass, ***Solarban* 67** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light sky-blue, low-reflective exterior appearance
Solarban ® **67 (2)** ***Solarblue*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
34%	0.22	0.26	10%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass, ***Solarban* 67** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Deep-blue, low-reflective exterior appearance
Solarban ® **67 (2)** ***Pacifica*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
26%	0.19	0.21	8%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass, ***Solarban* 67** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light-gray, ultra-neutral low-reflective exterior appearance
Solarban ® **67 (2)** ***Optigray*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
38%	0.24	0.27	12%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarban*** **67** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Optigray*** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Warm-bronze, low-reflective exterior appearance
Solarbronze ® **+** ***Solarban*** ® **67 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
32%	0.29	0.33	9%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **67** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Emerald-green, low-reflective exterior appearance
Atlantica ® **+** ***Solarban*** ® **67 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
41%	0.29	0.33	11%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Atlantica*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **67** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Aqua-blue, low-reflective exterior appearance
Azuria ® **+** ***Solarban*** ® **67 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
42%	0.29	0.33	11%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **67** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Cool light-gray, low-reflective exterior appearance
Solargray ® **+** ***Solarban*** ® **67 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
27%	0.26	0.30	8%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Soalrgary*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **67** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Dark-gray color, low-reflective exterior appearance
Graylite ® **II +** ***Solarban*** ® **67 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
5%	0.12	0.14	4%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Graylite*** **II** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **67** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Light sky-blue, low-reflective exterior appearance
Solarblue ® **+** ***Solarban*** ® **67 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
34%	0.30	0.34	9%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **67** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Deep-blue, low-reflective exterior appearance
Pacifica ® **+** ***Solarban*** ® **67 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
26%	0.23	0.27	7%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **67** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Light-gray, ultra-neutral low-reflective exterior appearance
Optigray ® **+** ***Solarban*** ® **67 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
38%	0.32	0.36	10%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Optigray*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass ***Solarban*** **67** solar control (sputtered) on third surface (3)

Type: Low-E Clear Insulating Glass
Clear, low-reflective exterior appearance
Solarban ® **70XL (2)** ***Starphire*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
64%	0.27	0.32	12%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Starphire*** glass, ***Solarban*** **70XL** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Emerald-green, low-reflective exterior appearance
Solarban ® **70XL (2)** ***Atlantica*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
51%	0.24	0.28	9%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Atlantica*** glass, ***Solarban*** **70XL** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Aqua-blue, low-reflective exterior appearance
Solarban ® **70XL (2)** ***Azuria*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
52%	0.25	0.29	9%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Solarban*** **70XL** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Cool light-gray, low-reflective exterior appearance
Solarban ® **70XL (2)** ***Solargray*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
34%	0.20	0.23	6%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solargray*** glass, ***Solarban*** **70XL** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light-green, low-reflective exterior appearance
Solarban ® **70XL (2)** ***Solexia*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
58%	0.27	0.31	10%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass, ***Solarban*** **70XL** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Warm-bronze, low-reflective exterior appearance
Solarban ® **70XL (2)** ***Solarbronze*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
40%	0.21	0.25	7%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass, ***Solarban*** **70XL** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light sky-blue, low-reflective exterior appearance
Solarban ® **70XL (2)** ***Solarblue*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
42%	0.23	0.26	8%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass, ***Solarban*** **70XL** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Deep-blue, low-reflective exterior appearance
Solarban ® **70XL (2)** ***Pacifica*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
32%	0.19	0.22	6%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass, ***Solarban*** **70XL** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light-gray, ultra-neutral- low-reflective exterior appearance
Solarban ® **70XL (2)** ***Optigray*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
47%	0.24	0.28	8%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Optigray*** glass, ***Solarban*** **70XL** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light-green, low-reflective exterior appearance
Solexia ® **+** ***Solarban*** ® **70XL (3)** ***Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
56%	0.32	0.37	11%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, ***Solarban*** **70XL** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Emerald-green, low-reflective exterior appearance
Atlantica ® **+** ***Solarban*** ® **70XL (3)** ***Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
49%	0.28	0.32	10%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Atlantica*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, ***Solarban*** **70XL** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Aqua-blue, low-reflective exterior appearance
Azuria ® **+ *Solarban*** ® **70XL (3) *Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
49%	0.29	0.33	9%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, ***Solarban* 70XL** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Warm-bronze, low-reflective exterior appearance
Solarbronze ® **+ *Solarban*** ® **70XL (3) *Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
38%	0.26	0.30	8%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, ***Solarban* 70XL** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Cool light-gray, low-reflective exterior appearance
Solargray ® **+ *Solarban*** ® **70XL (3) *Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
32%	0.24	0.27	7%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solargray*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, ***Solarban* 70XL** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Dark gray, low-reflective exterior appearance
Graylite ® **II + *Solarban*** ® **70XL (3) *Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
6%	0.11	0.13	4%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Graylite* II** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, ***Solarban* 70XL** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Light sky-blue, low-reflective exterior appearance
Solarblue ® **+ *Solarban*** ® **70XL (3) *Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
40%	0.27	0.32	8%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, ***Solarban* 70XL** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Deep-blue, low-reflective exterior appearance
Pacifica ® **+ *Solarban*** ® **70XL (3) *Starphire***® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
31%	0.22	0.26	6%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, ***Solarban* 70XL** solar control (sputtered) on third surface (3)

Type: Low-E Tinted Insulating Glass
Light-gray, ultra-neutral low-reflective exterior appearance
Optigray ® **+ *Solarban*** ® **70XL (3)** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
45%	0.29	0.33	9%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Optigray*** glass + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, ***Solarban* 70XL** solar control (sputtered) on third surface (3)

Type: Low-E Insulating Glass
Steel blue-gray, low-reflective exterior appearance
Solarban ® **z50 (2) *Optiblue*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
51%	0.32	0.36	8%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Optiblue*** glass, ***Solarban* z50** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Insulating Glass
Deep steel blue-gray, low-reflective exterior appearance
Solarban ® **z50 (2) *Optiblue*** ® **+ *Optiblue*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
37%	0.31	0.35	7%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Optiblue*** glass, ***Solarban* z50** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Optiblue*** glass

Type: Low-E Clear Insulating Glass
Steel blue-gray, low-reflective exterior appearance
Solarban® **z75 (2) *Optiblue*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
48%	0.24	0.28	9%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Optiblue*** glass, ***Solarban* z75** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Clear Insulating Glass
Clear, low-reflective exterior appearance
Solarban **®** **72 (2)** ***Starphire*** **®** **+** ***Starphire*** **®** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
71%	0.30	0.34	13%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Starphire*** glass, ***Solarban*** **72** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** Clear glass

Type: Reflective Tinted Insulating Glass
Subtly reflective aqua-blue exterior appearance
Vistacool ® **(2)** ***Azuria*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
47%	0.34	0.39	21%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Vistacool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Tinted Insulating Glass
Subtly reflective deep-blue exterior appearance
Vistacool ® **(2)** ***Pacifica*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
29%	0.32	0.37	11%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass, ***Vistacool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Tinted Insulating Glass
Reflective -light-green exterior appearance
Solarcool ® **(2)** ***Solexia*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
27%	0.31	0.36	24%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Tinted Insulating Glass
Reflective -aqua-blue exterior appearance
Solarcool ® **(2)** ***Azuria*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
24%	0.25	0.29	20%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Tinted Insulating Glass
Reflective- deep-blue exterior appearance
Solarcool ® **(2)** ***Pacifica*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
15%	0.25	0.29	10%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Tinted Insulating Glass
Reflective light sky-blue exterior appearance
Solarcool ® **(2) *Solarblue*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
20%	0.32	0.37	15%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Tinted Insulating Glass
Reflective warm-bronze exterior appearance
Solarcool ® **(2) *Solarbronze*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
19%	0.34	0.40	14%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Tinted Insulating Glass
Reflective cool light gray exterior appearance
Solarcool ® **(2) *Solargray*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
16%	0.32	0.36	11%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solargray*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Tinted Solar Control Low-E Insulating Glass
Subtly reflective aqua-blue exterior appearance
Vistacool ® **(2) *Azuria*** ® **+ *Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
42%	0.26	0.30	20%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Vistacool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass, low-e coating ***Solarban* 60** solar control (sputtered) on third surface (3)

Type: Reflective Tinted Solar Control Low-E Insulating Glass
Subtly reflective deep-blue exterior appearance
Vistacool ® **(2) *Pacifica*** ® **+ *Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
42%	0.26	0.30	20%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Vistacool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass, low-e coating ***Solarban* 60** solar control (sputtered) on third surface (3)

Type: Reflective Tinted Solar Control Low-E Insulating Glass
Reflective- light-green exterior appearance
Solarcool ® **(2)** ***Solexia*** ® **+** ***Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
24%	0.19	0.22	24%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass, low-e coating ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Reflective Tinted Solar Control Low-E Insulating Glass
Reflective -deep-blue exterior appearance
Solarcool ® **(2)** ***Pacifica*** ® **+** ***Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
13%	0.15	0.17	10%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass, low-e coating ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Reflective Tinted Solar Control Low-E Insulating Glass
Reflective -aqua-blue exterior appearance
Solarcool ® **(2)** ***Azuria*** ® **+** ***Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
21%	0.17	0.19	19%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass, low-e coating ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Reflective Tinted Solar Control Low-E Insulating Glass
Reflective warm-bronze exterior appearance
Solarcool ® **(2)** ***Solarbronze*** ® **+** ***Solarban***® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
17%	0.18	0.21	14%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass, low-e coating ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Reflective Tinted Solar Control Low-E Insulating Glass
Reflective cool light-gray exterior appearance
Solarcool ® **(2)** ***Solargray*** ® **+** ***Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
14%	0.17	0.20	11%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solargraye*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass, low-e coating ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Reflective Tinted Solar Control Low-E Insulating Glass
Reflective light sky-blue exterior appearance
Solarcool ® **(2) *Solarblue*** ® **+ *Solarban*** ® **60 (3) Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
17%	0.18	0.21	14%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass, low-e coating ***Solarban*** **60** solar control (sputtered) on third surface (3)

Type: Subtly Reflective Solar Control Low-E Insulating Glass
Subtly reflective aqua-blue exterior appearance
Vistacool ® **(2) *Azuria*** ® **+ *Solarban*** ® **70XL (3) *Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
38%	0.24	0.27	21%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Vistacool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, low-e coating ***Solarban*** **70XL** solar control (sputtered) on third surface (3)

Type: Subtly Reflective Solar Control Low-E Insulating Glass
Subtly reflective deep-blue exterior appearance
Vistacool ® **(2) *Pacifica*** ® **+ *Solarban*** ® **70XL (3) *Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
24%	0.19	0.22	11%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass, ***Vistacool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, low-e coating ***Solarban*** **70XL** solar control (sputtered) on third surface (3)

Type: Reflective Solar Control Low-E Insulating Glass
Reflective light-green exterior appearance
Solarcool ® **(2) *Solexia*** ® **+ *Solarban*** ® **70XL (3) *Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
22%	0.17	0.20	24%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, low-e coating ***Solarban*** **70XL** solar control (sputtered) on third surface (3)

Type: Reflective Solar Control Low-E Insulating Glass
Reflective -deep-blue exterior appearance
Solarcool ® **(2) *Pacifica*** ® **+ *Solarban*** ® **70XL (3) *Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
12%	0.13	0.15	10%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, low-e coating ***Solarban*** **70XL** solar control (sputtered) on third surface (3)

Type: Reflective Solar Control Low-E Insulating Glass
Reflective aqua-blue exterior appearance
Solarcool ® **(2)** ***Azuria*** ® **+** ***Solarban*** ® **70XL (3)** ***Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
19%	0.15	0.18	19%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, low-e coating ***Solarban*** **70XL** solar control (sputtered) on third surface (3)

Type: Reflective Solar Control Low-E Insulating Glass
Reflective warm-bronze exterior appearance
Solarcool ® **(2)** ***Solarbronze***® **+** ***Solarban*** ® **70XL (3)** ***Starphire***® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
15%	0.15	0.17	14%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, low-e coating ***Solarban*** **70XL** solar control (sputtered) on third surface (3)

Type: Reflective Solar Control Low-E Insulating Glass
Reflective cool light-gray exterior appearance
Solarcool ® **(2)** ***Solargray*** ® **+** ***Solarban***® **70XL (3)** ***Starphire***® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
13%	0.14	0.16	11%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solargray*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, low-e coating ***Solarban*** **70XL** solar control (sputtered) on third surface (3)

Type: Reflective Solar Control Low-E Insulating Glass
Reflective light-sky-blue exterior appearance
Solarcool ® **(2)** ***Solarblue*** ® **+** ***Solarban*** ® **70XL (3)** ***Starphire*** ® by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
16%	0.15	0.18	14%	0.28	0.26

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass, ***Solarcool*** on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass, low-e coating ***Solarban*** **70XL** solar control (sputtered) on third surface (3)

Type: Low-E Clear Insulating Glass
Clear, reflective exterior appearance
***Solarban*® R100 (2) Clear + Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
42%	0.23	0.27	32%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) Clear glass, ***Solarban* R100** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Ultra-Clear Low-E Insulating Glass
Ultra-clear, reflective exterior appearance
***Solarban*® R100 (2) *Starphire*® + *Starphire*®** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
44%	0.23	0.27	33%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Starphire*** glass, ***Solarban* R100** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) ***Starphire*** glass

Type: Low-E Tinted Insulating Glass
Emerald-green, reflective exterior appearance
***Solarban*® R100 (2) *Atlantica*® + Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
32%	0.19	0.22	20%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Atlantica*** glass, ***Solarban* R100** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Aqua-blue, reflective exterior appearance
***Solarban*® R100 (2) *Azuria*® + Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
32%	0.19	0.22	21%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Solarban* R100** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Insulating Glass
Steel blue-gray, reflective exterior appearance
***Solarban*® R100 (2) *Optiblue*® + Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
30%	0.20	0.23	19%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Optiblue*** glass, ***Solarban* R100** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Cool light-gray, reflective exterior appearance
Solarban ® **R100 (2)** ***Solargray*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
21%	0.17	0.19	12%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solargray*** glass, ***Solarban*** **R100** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light-green, reflective exterior appearance
Solarban® **R100 (2)** ***Solexia*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
36%	0.21	0.24	25%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass, ***Solarban*** **R100** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Warm-bronze, reflective exterior appearance
Solarban ® **R100 (2)** ***Solarbronze***® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
25%	0.18	0.21	15%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass, ***Solarban*** **R100** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light sky-blue, reflective exterior appearance
Solarban® **R100 (2)** ***Solarblue*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
26%	0.19	0.22	15%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass, ***Solarban*** **R100** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Deep-blue, reflective exterior appearance
Solarban® **R100 (2)** ***Pacifica*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
20%	0.16	0.19	11%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass, ***Solarban*** **R100** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Low-E Tinted Insulating Glass
Light-gray, ultra-neutral reflective exterior appearance
***Solarban*® R100 (2) *Optigray*® + Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
29%	0.20	0.22	18%	0.29	0.27

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Optigray*** glass, ***Solarban* R100** solar control (sputtered) on second surface (2) + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Solar Control Low-E Insulating Glass
Reflective light-green exterior appearance
Solarcool ® **(1)** ***Solexia*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
27%	0.28	0.32	37%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solexia*** glass, ***Solarcool*** on the first surface + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Solar Control Low-E Insulating Glass
Reflective deep-blue exterior appearance
Solarcool ® **(1)** ***Pacifica*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
14%	0.21	0.24	36%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Pacifica*** glass, ***Solarcool*** on the first surface + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Solar Control Low-E Insulating Glass
Reflective aqua-blue exterior appearance
Solarcool ® **(1)** ***Azuria*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
23%	0.21	0.25	37%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Azuria*** glass, ***Solarcool*** on the first surface + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Solar Control Low-E Insulating Glass
Reflective warm-bronze exterior appearance
Solarcool ® **(1)** ***Solarbronze*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
18%	0.31	0.35	37%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarbronze*** glass, ***Solarcool*** on the first surface + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Solar Control Low-E Insulating Glass
Reflective light sky-blue exterior appearance
Solarcool ® **(1)** ***Solarblue*** ® **+ Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
19%	0.29	0.33	37%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solarblue*** glass, ***Solarcool*** on the first surface + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

Type: Reflective Solar Control Low-E Insulating Glass
Reflective cool light-gray exterior appearance

Solarcool ® **(1) *Solargray*® + Clear** by Vitro Architectural Glass

Performance Values

Visible Light Transmission	SHGC	Shading Coefficient	Exterior Reflectance	U-Value Winter	U-Value Summer
15%	0.28	0.32	36%	0.47	0.50

Insulating Glass Unit Construction: 1/4 inch (6mm) ***Solgray*** glass, ***Solarcool*** on the first surface + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear glass

PART 3 EXECUTION

3.1 INSTALLATION

A. Refer to Section 08800 – Glazing for installation requirements

PART 4 END OF SECTION