Product Catalog

Versalux®

FLOAT GLASS

Where Vision meets Design

a zeledyne brand

ZELEDYNE - PRODUCTS WITH VISION

Cover (left to right) :
1) Seneca Casino , VERSALUX® BLUE, GREEN AND GREEN 2000; **Architect:** JCJ Architecture; **Fabricator:** Viracon; **Glazier:** CBO Glass ; 2) Dudley Tower, Wausau, Wisconsin; VERSALUX® BLUE 2000. **Fabricator:** Custom Glass Products of Schofield; **Glazier:** Corcoran Glass; Wes Thompson Photography 3) University of Phoenix, VERSALUX® GREEN 2000R; **Architects:** Gromatzky Dupree & Associates Southwest LLC, Tucson, AZ; **Fabricator:** Oldcastle Glass, Phoenix, AZ; **Glazier:** Glass Unlimited, Tucson, AZ.; Wes Thompson Photography
Below: Las Olas Riverhouse, Fort Lauderdale, FL, VERSALUX® BLUE **Fabricator:** Prelco; **Glazier:** Gamma; Wes Thompson Photography

Rich Heritage, New Vision

Zeledyne is a new company with a long and successful history. The original company began in 1919 when Henry Ford set up large-scale production facilities to manufacture glass for his Model T's.

Today, Zeledyne is building upon that legacy. Headquartered in Allen Park, MI, with float and fabrication facilities in Tulsa, OK, Nashville, TN and Juarez, Mexico, we are committed to excellence in automotive and architectural glass quality and performance. Customers demanding product reliability and commitment to on-time delivery, at a fair market price, will recognize Zeledyne as a company uniquely positioned to meet these needs in the global market.

Independent and flexible, Zeledyne is able to quickly adapt to changing market demands while maintaining the highest standards of reliability and consistency. All Zeledyne manufacturing facilities are certified to ISO14001, the international environmental management standard, and to ISO9001, the international float glass quality standard. All Versalux products are manufactured with a minimum of 30% post-industrial recycled content. Although Zeledyne enjoys a rich history of dependable products, we won't rest on our laurels. Our new vision is a promise to look toward the future....growing and changing to meet our customers' needs, and providing them with the most reliable and innovative glass products and services in the world.

A Greater Depth of Color

Whether you're a design professional, developer, fabricator or glazing contractor, you'll be pleasantly surprised at how Versalux enhances the possibilities for your commercial or residential project.

Versalux is available in blue, green, grey and bronze providing a beautiful appearance and reducing glare. Compared to uncoated clear glass, tinted Versalux reduces heat gain and UV light transmission.

- ***Versalux 2000*** is offered in blue, green and grey, providing deeper richer tones and enhanced solar performance compared to Versalux.
- ***Versalux R*** (formerly Versalux RC) is available in blue, green, grey and bronze. A reflective coating is applied to the Versalux tinted substrates to further enhance solar performance.
- ***Versalux 2000R*** is produced when a pyrolytic reflective coating is applied to Versalux Blue 2000 and Green 2000 to block even more solar energy, including harmful ultraviolet rays.
- ***Versalux 2000T*** provides a brighter blue or deeper green appearance by applying a titanium-based pyrolytic coating to Versalux Blue 2000 and Green 2000.

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VERSALUX PRODUCTS

Where Vision Meets Design

Zeledyne's Versalux®, the "oldest new name" in architectural glass, continues to forge ahead with visionary leadership. Whatever you need, no matter where in the world you need it, Zeledyne delivers. We do more than fill your order...we fulfill your expectations and go beyond them. Whether you're designing for Atlanta or Abu Dhabi, Lima or Laguna Niguel, Versalux fits the bill. Our products are designed to filter the sun's heat and dramatically reduce harmful UV rays. At the same time, air conditioning costs and fabric fading may also be significantly reduced.

Versalux Quality

Versalux glass is easy to fabricate and install and is available in a range of thicknesses suitable for most architectural applications. And our quality control results in consistent color and uniform tone for a look that you can depend on.

Versalux Applications

Whatever your application, there is a Versalux glass to suit your needs. In this brochure you will find specific information about all of our Versalux glass: tinted Versalux, Versalux 2000, tinted reflective, Versalux R, Versalux 2000R and Versalux 2000T. (Please note that reflective glass and some Versalux 2000 products may require heat strengthening or tempering to reduce the possibility of solar induced thermal breakage.)

Versalux Availability

All Versalux products are readily available through our fabricator customers. They can be heat treated at any time by regional fabricators, thus improving lead time. So you get the glass you want when you want it.

THE COLORS OF VERSALUX®

- Versalux® Blue
- Versalux® Blue R
- Versalux® Blue 2000
- Versalux® Blue 2000R
- Versalux® Blue 2000T
- Versalux® Green
- Versalux® Green R
- Versalux® Green 2000
- Versalux® Green 2000R
- Versalux® Green 2000T
- Versalux® Grey
- Versalux® Grey R
- Versalux® Grey 2000
- Versalux® Bronze
- Versalux® Bronze R

Corporate Crossings, Dearborn, MI
Glass: VERSALUX® GREY and MSVD Reflective Coating
Fabricator: Viracon
Glazier: American Glass & Metals

Reglazing Process

Before After

Prizm Building, Tulsa, OK
Glass: VERSALUX® BLUE 2000T
Glazier: American Glass and Metal

Turn Out-Dated Into Up-to-Date

Zeledyne's Versalux color palette can dramatically improve and update most architectural retrofit and restoration projects. Our wide range of tinted and reflective tinted glass products can give aging buildings a new, inviting look.

With retrofit projects, there is frequently great latitude in glass selection. So you can creatively use colors and reflective coatings to achieve aesthetic goals while still conforming to mandates of the HVAC system.

Imagine the possibilities. Versalux products are available in hues of bronze, grey, green and blue along with a variety of visible light transmittances, shading coefficients and U-values in fabricated products to offer broad freedom in design. Moreover, Versalux products can be post heat treated, bent, laminated and fabricated into insulated glass.

Versalux products also reduce the transmission of harmful ultraviolet and near infrared rays while permitting variable amounts of daylight to enter through vision areas. In fact, when assembled in insulated units with clear or Low-E coated glass, many Versalux products are spectrally selective.*

On some retrofit projects, using Versalux products may actually lower heating and cooling costs and reduce HVAC capacity requirements.

DOWNLOAD SPECS

You can download our specs at www.zeledyne.com. Check out our new website for an in-depth view of Versalux products and current technical specifications.

WWW.ZELEDYNE.COM

**Spectrally Selective Glazing Products have Visible Light Transmission of >40% and LSG ratio of >1.25 as outlined by the Federal Energy Management Program (DOE/EE-0173 Federal Technology Alert.)*

PRODUCT AVAILABILITY

Tinted Glass

COLOR	THICKNESSES AVAILABLE
Versalux® Blue 2000	1/4", 5/16" (6, 8mm)
Versalux® Green 2000	1/8", 1/4", 5/16" (3, 6, 8mm)
Versalux® Grey 2000	1/8", 1/4" (3, 6mm)
Versalux® Blue	1/4", 5/16" (6, 8mm)
Versalux® Green	1/8", 5/32", 3/16", 1/4" (3, 4, 5, 6mm)
Versalux® Grey	1/8", 5/32", 3/16", 1/4" (3, 4, 5, 6mm)
Versalux® Bronze	1/8", 5/32", 3/16", 1/4" (3, 4, 5, 6mm)

Reflective Glass

COLOR	THICKNESSES AVAILABLE
Versalux® Blue 2000R	1/4" (6mm)
Versalux® Blue 2000T	1/4" (6mm)
Versalux® Green 2000R	1/4", 5/16" (6, 8mm)
Versalux® Green 2000T	1/4" (6mm)
Versalux® Blue R	1/4" (6mm)
Versalux® Green R	1/4" (6mm)
Versalux® Grey R	5/32", 1/4" (4, 6mm)
Versalux® Bronze R	5/32", 3/16", 1/4" (4, 5, 6mm)

Any of the above substrates may be available in additional thicknesses by special order. Check with your Zeledyne Regional Sales Manager for availability, minimum requirements and lead time.

115 East Crossroads Parkway, Bolingbrook, IL
Glass: VERSALUX® BLUE 2000T
Developer: IDI
Architect: Sparks Architects

Product Availability

All Versalux® products are manufactured in conformance with applicable provisions of ASTM C 1036 - 2001 (The American Society for Testing And Materials ASTM C 1036 - 2001 Standard Specification for Flat Glass.) Many Versalux products may be key components used by window fabricators when attaining "Energy Star" status for glazing assemblies.

Versalux products are available from qualified fabricators that fabricate sophisticated architectural glass products that comply with design professionals' specifications. Available products are indicated above. Please contact your Zeledyne Regional Sales Manager or Architectural Support Manager for names of fabricators in your area.

You Can See the Light Without Taking the Heat

Versalux blocks up to 80%[1] of the sun's ultraviolet rays, substantially reducing fading of most carpets, draperies, upholstery and artwork. It's available in a wide variety of light transmittance levels and is designed to significantly reduce air conditioning costs for both residential and commercial applications. With Zeledyne Versalux, you'll help keep occupants cool while keeping expenses down.

The Versalux 2000 series is available in a range of thicknesses to accommodate most residential and architectural needs. It provides richer, deeper tones of blue, green and grey and is designed with improved solar-heat reduction properties for better performance than ever. And remember, all Versalux products give enhanced thermal performance when fabricated into insulated glass units. (See charts, pages 7-10.)

[1]From LBNL WINDOW 5.2 V5.2.17 COMPUTER ANALYSIS. (300-380 nanometers.)

Looking Good Outside, Feeling Good Inside

Versalux heat absorbing glass products not only enhance the exterior appearance of a building, they also raise interior energy efficiency while reducing solar glare. Versalux also substantially re-radiates the solar energy that it absorbs to the exterior and can reduce energy costs. And the soft, natural hues harmonize with today's building materials giving a pleasing, contemporary look to both new and existing structures.

So with the combination of distinctive colors (two blues, two greens, two greys and bronze), plus excellent solar control properties and a wide range of visible light transmittances, it's no wonder that Versalux colors have become a popular choice among the world's leading architects and design professionals.

Specifying Zeledyne Versalux is obviously a decision you can feel good about. So call your regional sales manager or architectural support manager today. Visit our website at www.zeledyne.com for current contact information.

North Scottsdale Corporate Center, Phoenix, AZ
Glass: VERSALUX® Blue R
Fabricator: Oldcastle-Phoenix
Glazier: Romanoski Glass, Phoenix, Arizona

Tinted Monolithic

Versalux® Performance Characteristics - Monolithic Glass

Calculated by LBNL WINDOW 5.2 v5.2.17 COMPUTER PROGRAM

PRODUCT	Glass Thickness Nominal	Transmittance %			LSG Ratio	Outdoor Reflectance%		Indoor Reflectance%	Customary System Values					Metric Values		
									U-Value[a]		Shading Coefficient[b]	Solar Heat Gain Coefficient[c]	Relative Heat Gain[d] BTU Ft^2	K-Value[a]		Relative Heat Gain[d] W/m^2
	Inch (mm)	Total Solar	Visible	Ultra Violet[e]	∇	Total Solar	Visible	Visible	Winter Nighttime	Summer Daytime				Winter Nighttime	Summer Daytime	
Versalux® Blue 2000	1/4" (6mm)	30	43	14	0.86	5	5	5	1.02	0.92	0.59	0.50	130	5.81	5.25	410
	5/16" (8mm)	22	33	9	0.73	4	5	5	1.01	0.91	0.52	0.45	117	5.74	5.19	369
Versalux® Green 2000	1/8" (3mm)	48	76	27	1.23	5	7	7	1.04	0.94	0.71	0.62	156	5.91	5.33	492
	3/16" (5mm)	38	70	19	1.27	5	7	7	1.03	0.93	0.64	0.55	141	5.86	5.28	445
	1/4" (6mm)	33	66	15	1.27	5	6	6	1.03	0.93	0.60	0.52	134	5.82	5.25	422
	5/16" (8mm)	25	58	9	1.23	5	6	6	1.01	0.91	0.55	0.47	122	5.74	5.19	384
Versalux® Grey 2000	1/8" (3mm)	19	23	4	0.55	4	4	4	1.04	0.94	0.49	0.42	112	5.90	5.32	353
	3/16" (5mm)	10	12	1	0.33	4	4	4	1.03	0.93	0.43	0.36	99	5.86	5.28	312
	1/4" (6mm)	7	8	1	0.24	4	4	4	1.03	0.93	0.40	0.34	94	5.82	5.25	296
Versalux® Blue	1/4" (6mm)	47	57	33	0.93	5	6	6	1.02	0.92	0.71	0.61	155	5.81	5.25	488
	5/16" (8mm)	38	48	26	0.87	5	5	5	1.01	0.91	0.64	0.55	141	5.74	5.19	445
	3/8" (10mm)	34	45	24	0.85	5	5	5	1.00	0.91	0.61	0.53	136	5.69	5.15	428
Versalux® Green	1/8" (3mm)	61	83	40	1.17	6	7	7	1.04	0.94	0.82	0.71	176	5.91	5.33	556
	5/32" (4mm)	57	81	36	1.19	6	7	7	1.04	0.94	0.79	0.68	170	5.88	5.31	537
	3/16" (5mm)	52	79	32	1.22	6	7	7	1.03	0.93	0.75	0.65	163	5.86	5.28	513
	1/4" (6mm)	47	76	27	1.25	5	7	7	1.03	0.93	0.71	0.61	155	5.82	5.25	489
Versalux® Grey	1/8" (3mm)	61	62	38	0.87	6	6	6	1.04	0.94	0.82	0.71	177	5.91	5.33	557
	5/32" (4mm)	57	58	34	0.85	6	6	6	1.04	0.94	0.78	0.68	170	5.88	5.31	536
	3/16" (5mm)	51	52	29	0.81	5	6	6	1.03	0.93	0.74	0.64	161	5,86	5.28	509
	1/4" (6mm)	45	46	24	0.77	5	5	5	1.03	0.93	0.70	0.60	152	5.82	5.25	481
Versalux® Bronze	1/8" (3mm)	64	67	36	0.92	6	6	6	1.04	0.94	0.84	0.73	181	5.91	5.33	570
	5/32" (4mm)	60	64	32	0.91	6	6	6	1.04	0.94	0.81	0.70	174	5.88	5.31	550
	3/16" (5mm)	54	59	27	0.89	6	6	6	1.03	0.93	0.77	0.66	166	5.86	5.28	524
	1/4" (6mm)	49	53	23	0.85	5	6	6	1.03	0.93	0.72	0.62	158	5.82	5.25	498

It is recommended these products be heat treated (heat strengthened or fully tempered) to withstand solar induced thermal stresses. *See Footnotes Page 26*

News-Journal Center, Daytona Beach, FL
Glass: VERSALUX® Blue 2000
Architects: Baker Barrios Architects, Orlando
Fabricator: EFCO

Tinted Insulated w/ Clear

Versalux® Performance Characteristics - Tinted Insulated Glass - Inboard Lite Clear/Both Lites Identical Thickness Except 5/16" (8mm) has 1/4" (6mm) Interior Lite of Clear Float Glass.

Calculated by LBNL WINDOW 5.2 v5.2.17 COMPUTER PROGRAM

PRODUCT	Glass Thickness Nominal	Air Space@ Thickness Nominal	Transmittance %			LSG Ratio ∇	Outdoor Reflectance %		Indoor Reflectance %	Customary System Values					Metric Values		
										U-Value[a]		Shading Coefficient[b]	Solar Heat Gain Coefficient[c]	Relative Heat Gain[d] BTU Ft 2	K-Value[a]		Relative Heat Gain[d] W/m2
	Inch (mm)	Inch (mm)	Total Solar	Visible	Ultra Violet[e]		Total Solar	Visible	Visible	Winter Nighttime	Summer Daytime				Winter Nighttime	Summer Daytime	
Versalux® Blue 2000	1/4" (6mm)	1/2" (12.7mm)	25	38	11	1.00	6	7	12	0.47	0.50	0.44	0.38	94	2.69	2.82	298
			25	38	11	1.03	6	7	12	0.45	0.47	0.43	0.37	93	2.53	2.69	294
	5/16" (8mm)	1/2" (12.7mm)	18	29	7	0.91	5	6	12	0.47	0.49	0.37	0.32	81	2.67	2.80	255
			18	29	7	0.94	5	6	12	0.44	0.47	0.36	0.31	79	2.52	2.67	250
Versalux® Green 2000	1/8" (3mm)	1/4" (6.5mm)	41	69	23	1.35	8	12	14	0.55	0.57	0.60	0.51	127	3.12	3.21	400
			41	69	23	1.35	8	12	14	0.50	0.53	0.59	0.51	125	2.85	3.00	395
	3/16" (5mm)	1/2" (12.7mm)	32	63	16	1.47	7	11	13	0.48	0.50	0.50	0.43	107	2.70	2.84	339
			32	63	16	1.47	7	11	13	0.45	0.48	0.50	0.43	106	2.55	2.70	335
	1/4" (6mm)	1/2" (12.7mm)	28	59	12	1.48	6	10	13	0.47	0.50	0.46	0.40	99	2.69	2.82	312
			28	59	12	1.51	6	10	13	0.45	0.47	0.46	0.39	98	2.53	2.69	308
	5/16" (8mm)	1/2" (12.7mm)	21	52	7	1.53	6	9	13	0.47	0.49	0.40	0.34	87	2.67	2.80	273
			21	52	7	1.53	6	9	13	0.44	0.47	0.39	0.34	85	2.52	2.67	268
Versalux® Grey 2000	1/8" (3mm)	1/4" (6.5mm)	16	20	3	0.65	5	5	12	0.55	0.57	0.36	0.31	80	3.12	3.21	252
			16	20	3	0.67	5	5	12	0.50	0.53	0.35	0.30	77	2.85	3.00	244
	3/16" (5mm)	1/2" (12.7mm)	8	11	1	0.48	4	4	12	0.48	0.50	0.27	0.23	61	2.70	2.84	192
			8	11	1	0.50	4	4	12	0.45	0.48	0.26	0.22	59	2.55	2.70	187
	1/4" (6mm)	1/2" (12.7mm)	5	7	1	0.33	4	4	11	0.47	0.50	0.24	0.21	55	2.69	2.82	174
			5	7	1	0.35	4	4	11	0.45	0.47	0.23	0.20	53	2.53	2.69	168
Versalux® Blue	1/4" (6mm)	1/2" (12.7mm)	38	50	26	1.02	7	8	13	0.47	0.50	0.57	0.49	121	2.69	2.82	381
			38	50	26	1.02	7	8	13	0.45	0.47	0.57	0.49	120	2.53	2.69	378
	5/16" (8mm)	1/2" (12.7mm)	31	43	21	1.00	6	7	12	0.47	0.49	0.50	0.43	106	2.67	2.80	336
			31	43	21	1.00	6	7	12	0.44	0.47	0.49	0.43	105	2.52	2.67	332
Versalux® Green	1/8" (3mm)	1/4" (6.5mm)	52	75	34	1.23	9	13	14	0.55	0.57	0.70	0.61	148	3.12	3.21	467
			52	75	34	1.25	9	13	14	0.50	0.53	0.70	0.60	147	2.85	3.00	463
	5/32" (4mm)	1/4" (6.5mm)	48	73	30	1.28	9	13	14	0.55	0.56	0.66	0.57	141	3.11	3.19	443
			48	73	30	1.28	9	13	14	0.50	0.53	0.66	0.57	139	2.84	2.99	440
	3/16" (5mm)	1/2" (12.7mm)	43	70	26	1.32	8	12	14	0.48	0.50	0.62	0.53	130	2.70	2.84	410
			43	70	26	1.32	8	12	14	0.45	0.48	0.61	0.53	129	2.55	2.70	408
	1/4" (6mm)	1/2" (12.7mm)	39	68	22	1.36	8	12	14	0.47	0.50	0.57	0.50	122	2.69	2.82	384
			39	68	22	1.39	8	12	14	0.45	0.47	0.57	0.49	121	2.53	2.69	381
Versalux® Grey	1/8" (3mm)	1/4" (6.5mm)	52	56	32	0.92	9	9	13	0.55	0.57	0.70	0.61	148	3.12	3.21	466
			52	56	32	0.93	9	9	13	0.50	0.53	0.70	0.60	147	2.85	3.00	463
	5/32" (4mm)	1/4" (6.5mm)	47	52	28	0.91	8	9	13	0.55	0.56	0.66	0.57	139	3.11	3.19	440
			47	52	28	0.91	8	9	13	0.50	0.53	0.66	0.57	138	2.84	2.99	436
	3/16" (5mm)	1/2" (12.7mm)	41	47	24	0.90	7	8	13	0.48	0.50	0.60	0.52	128	2.70	2.84	403
			41	47	24	0.90	7	8	13	0.45	0.48	0.60	0.52	127	2.55	2.70	401
	1/4" (6mm)	1/2" (12.7mm)	36	41	20	0.85	7	7	12	0.47	0.50	0.55	0.48	118	2.69	2.82	372
			36	41	20	0.85	7	7	12	0.45	0.47	0.55	0.48	117	2.53	2.69	369
Versalux® Bronze	1/8" (3mm)	1/4" (6.5mm)	54	61	31	0.98	9	10	13	0.55	0.57	0.72	0.62	152	3.12	3.21	479
			54	61	31	0.98	9	10	13	0.50	0.53	0.72	0.62	151	2.85	3.00	476
	5/32" (4mm)	1/4" (6.5mm)	49	57	27	0.97	9	9	13	0.55	0.56	0.68	0.59	144	3.11	3.19	455
			49	57	27	0.97	9	9	13	0.50	0.53	0.68	0.59	143	2.84	2.99	451
	3/16" (5mm)	1/2" (12.7mm)	44	52	22	0.95	8	9	13	0.48	0.50	0.63	0.55	133	2.70	2.84	420
			44	52	22	0.96	8	9	13	0.45	0.48	0.63	0.54	132	2.55	2.70	417
	1/4" (6mm)	1/2" (12.7mm)	39	47	18	0.94	7	8	13	0.47	0.50	0.58	0.50	123	2.69	2.82	389
			39	47	18	0.94	7	8	13	0.45	0.47	0.58	0.50	123	2.53	2.69	387

@ Air Space Filling: Light Bands Air Filled – Dark Bands Argon Filled

It is recommended these products be heat treated (heat strengthened or fully tempered) to withstand solar induced thermal stresses. *See Footnotes Page 26*

Tinted Insulated w/ Pyrolytic Low-E

Versalux® Performance Characteristics - Tinted Insulated Glass - Pyrolytic Low Emissivity Coated Clear Glass in Identical Thickness of the Tinted Substrate (Except 5/16" (8mm) has 1/4" (6mm) Low E Coated Glass) Emissivity of Coated Surface is .156 - .158 & Total Solar Reflectance is 11% - 12%. Low Emissivity Coating on 3rd Glass Surface from Building Exterior.
Calculated by LBNL WINDOW 5.2 v5.2.17 COMPUTER PROGRAM

PRODUCT	Glass Thickness Nominal	Air Space[@] Thickness Nominal	Transmittance %			LSG Ratio	Outdoor Reflectance %		Indoor Reflectance %	Customary System Values					Metric Values		
										U-Value[a]		Shading Coefficient[b]	Solar Heat Gain Coefficient[c]	Relative Heat Gain[d] BTU Ft^2	K-Value[a]		Relative Heat Gain[d] W/m^2
	Inch (mm)	Inch (mm)	Total Solar	Visible	Ultra Violet[e]	∇	Total Solar	Visible	Visible	Winter Nighttime	Summer Daytime				Winter Nighttime	Summer Daytime	
Versalux® Blue 2000	1/4" (6mm)	1/2" (12.7mm)	21	35	9	1.09	6	7	14	0.33	0.33	0.37	0.32	79	1.88	1.86	250
			21	35	9	1.09	6	7	14	0.29	0.28	0.37	0.32	77	1.62	1.58	242
	5/16" (8mm)	1/2" (12.7mm)	15	27	6	1.04	5	6	13	0.33	0.33	0.30	0.26	65	1.87	1.85	262
			15	27	6	1.08	5	6	13	0.29	0.28	0.29	0.25	62	1.62	1.57	197
Versalux® Green 2000	1/8" (3mm)	1/4" (6.5mm)	35	63	19	1.37	9	14	16	0.44	0.45	0.53	0.46	113	2.48	2.53	356
			35	63	19	1.37	9	14	16	0.36	0.38	0.53	0.46	110	2.05	2.14	348
	3/16" (5mm)	1/2" (12.7mm)	28	58	13	1.53	8	12	15	0.33	0.33	0.44	0.38	93	1.89	1.87	292
			28	58	13	1.57	8	12	15	0.29	0.28	0.43	0.37	90	1.63	1.59	285
	1/4" (6mm)	1/2" (12.7mm)	24	55	10	1.57	7	11	14	0.33	0.33	0.40	0.35	85	1.88	1.86	267
			24	55	10	1.62	7	11	14	0.29	0.28	0.39	0.34	82	1.62	1.58	259
	5/16" (8mm)	1/2" (12.7mm)	19	48	6	1.66	6	10	14	0.33	0.33	0.34	0.29	72	1.87	1.85	226
			19	48	6	1.71	6	10	14	0.29	0.28	0.32	0.28	69	1.62	1.57	217
Versalux® Grey 2000	1/8" (3mm)	1/4" (6.5mm)	13	19	3	0.73	5	5	14	0.44	0.45	0.30	0.26	66	2.48	2.53	210
			13	19	3	0.79	5	5	14	0.36	0.38	0.28	0.24	62	2.05	2.14	195
	3/16" (5mm)	1/2" (12.7mm)	7	10	1	0.59	4	5	14	0.33	0.33	0.20	0.17	45	1.89	1.87	141
			7	10	1	0.63	4	5	14	0.29	0.28	0.19	0.16	41	1.63	1.59	130
	1/4" (6mm)	1/2" (12.7mm)	4	7	0	0.47	4	4	13	0.33	0.33	0.17	0.15	39	1.88	1.86	123
			4	7	0	0.54	4	4	13	0.29	0.28	0.16	0.13	35	1.62	1.58	111
Versalux® Blue	1/4" (6mm)	1/2" (12.7mm)	32	47	21	1.07	8	9	14	0.33	0.33	0.51	0.44	107	1.88	1.86	337
			32	47	21	1.07	8	9	14	0.29	0.28	0.51	0.44	105	1.62	1.58	332
	5/16" (8mm)	1/2" (12.7mm)	26	40	17	1.05	7	8	14	0.33	0.33	0.44	0.38	92	1.87	1.85	290
			26	40	17	1.08	7	8	14	0.29	0.28	0.43	0.37	90	1.62	1.57	283
Versalux® Green	1/8" (3mm)	1/4" (6.5mm)	44	69	27	1.25	11	15	16	0.44	0.45	0.64	0.55	133	2.48	2.53	420
			44	69	27	1.25	11	15	16	0.36	0.38	0.63	0.55	132	2.05	2.14	415
	5/32" (4mm)	1/4" (6.5mm)	40	67	24	1.29	10	15	15	0.44	0.44	0.60	0.52	127	2.47	2.52	400
			40	67	24	1.29	10	15	15	0.36	0.38	0.60	0.52	125	2.04	2.13	395
	3/16" (5mm)	1/2" (12.7mm)	37	66	21	1.38	10	14	16	0.33	0.33	0.56	0.48	116	1.89	1.87	366
			37	66	21	1.38	10	14	16	0.29	0.28	0.55	0.48	114	1.63	1.59	361
	1/4" (6mm)	1/2" (12.7mm)	33	63	17	1.40	9	13	15	0.33	0.33	0.52	0.45	108	1.88	1.86	340
			33	63	17	1.43	9	13	15	0.29	0.28	0.51	0.44	106	1.62	1.58	335
Versalux® Grey	1/8" (3mm)	1/4" (6.5mm)	42	52	26	0.95	11	11	15	0.44	0.45	0.63	0.55	133	2.48	2.53	418
			42	52	26	0.95	11	11	15	0.36	0.38	0.63	0.55	131	2.05	2.14	414
	5/32" (4mm)	1/4" (6.5mm)	38	48	22	0.92	10	10	14	0.44	0.44	0.60	0.52	125	2.47	2.52	396
			38	48	22	0.94	10	10	14	0.36	0.38	0.59	0.51	124	2.04	2.13	391
	3/16" (5mm)	1/2" (12.7mm)	35	43	19	0.91	9	9	15	0.33	0.33	0.54	0.47	113	1.89	1.87	358
			35	43	19	0.91	9	9	15	0.29	0.28	0.54	0.47	112	1.63	1.59	353
	1/4" (6mm)	1/2" (12.7mm)	30	38	15	0.88	8	8	14	0.33	0.33	0.50	0.43	104	1.88	1.86	327
			30	38	15	0.88	8	8	14	0.29	0.28	0.49	0.43	102	1.62	1.58	322
Versalux® Bronze	1/8" (3mm)	1/4" (6.5mm)	44	56	25	0.98	11	12	15	0.44	0.45	0.65	0.57	137	2.48	2.53	431
			44	56	25	0.98	11	12	15	0.36	0.38	0.65	0.57	136	2.05	2.14	428
	5/32" (4mm)	1/4" (6.5mm)	41	52	21	0.96	10	11	15	0.44	0.44	0.62	0.54	130	2.47	2.52	410
			41	52	21	0.98	10	11	15	0.36	0.38	0.62	0.53	129	2.04	2.13	406
	3/16" (5mm)	1/2" (12.7mm)	37	49	18	0.98	9	10	15	0.33	0.33	0.57	0.50	119	1.89	1.87	375
			37	49	18	1.00	9	10	15	0.29	0.28	0.57	0.49	118	1.63	1.59	371
	1/4" (6mm)	1/2" (12.7mm)	33	44	15	0.96	8	9	14	0.33	0.33	0.53	0.46	110	1.88	1.86	346
			33	44	15	0.98	8	9	14	0.29	0.28	0.52	0.45	108	1.62	1.58	341

@ Air Space Filling: Light Bands Air Filled – Dark Bands Argon Filled

It is recommended these products be heat treated (heat strengthened or fully tempered) to withstand solar induced thermal stresses.

See Footnotes Page 26

Tinted Insulated w/MSVD (Sputter) Low-E, Third Surface Coating

Versalux® Performance Characteristics - Tinted Insulated Glass - MSVD (Sputter) Low Emissivity Coated Clear Glass in Identical Thickness of the Tinted Substrate (Except 5/16" (8mm) has 1/4" (6mm) Low E Coated Glass) Emissivity of Coated Surface is .043 & Total Solar Reflectance of 43%. Low Emissivity Coating on 3rd Glass Surface from Building Exterior.

Calculated by LBNL WINDOW 5.2 v5.2.17 COMPUTER PROGRAM

PRODUCT	Glass Thickness Nominal	Air Space@ Thickness Nominal	Transmittance %			LSG Ratio	Outdoor Reflectance %		Indoor Reflectance%	Customary System Values					Metric Values		
										U-Value [a]		Shading Coefficient [b]	Solar Heat Gain Coefficient [c]	Relative Heat Gain [d] BTU Ft 2	K-Value [a]		Relative Heat Gain [d] W/m 2
	Inch (mm)	Inch (mm)	Total Solar	Visible	Ultra Violet [e]	∇	Total Solar	Visible	Visible	Winter Nighttime	Summer Daytime				Winter Nighttime	Summer Daytime	
Versalux® Blue 2000	1/4" (6mm)	1/2" (12.7mm)	15	33	4	1.27	7	6	10	0.29	0.28	0.30	0.26	64	1.67	1.57	201
			15	33	4	1.32	7	6	10	0.24	0.22	0.29	0.25	61	1.38	1.24	191
	5/16" (8mm)	1/2" (12.7mm)	12	26	3	1.18	6	5	9	0.29	0.28	0.25	0.22	54	1.66	1.57	171
			12	26	3	1.24	6	5	9	0.24	0.22	0.24	0.21	51	1.37	1.23	160
Versalux® Green 2000	1/8" (3mm)	1/4" (6.5mm)	25	60	8	1.58	11	10	11	0.41	0.41	0.44	0.38	94	2.32	2.34	295
			25	60	8	1.62	11	10	11	0.33	0.33	0.43	0.37	90	1.84	1.90	285
	3/16" (5mm)	1/2" (12.7mm)	22	55	5	1.67	8	9	11	0.30	0.28	0.38	0.33	79	1.68	1.58	249
			22	55	5	1.72	8	9	11	0.24	0.22	0.37	0.32	76	1.38	1.24	241
	1/4" (6mm)	1/2" (12.7mm)	20	52	4	1.73	7	9	10	0.29	0.28	0.35	0.30	74	1.67	1.57	233
			20	52	4	1.79	7	9	10	0.24	0.22	0.34	0.29	71	1.38	1.24	224
	5/16" (8mm)	1/2" (12.7mm)	16	45	3	1.73	6	8	10	0.29	0.28	0.31	0.26	65	1.66	1.57	205
			16	45	3	1.80	6	8	10	0.24	0.22	0.29	0.25	61	1.37	1.23	194
Versalux® Grey 2000	1/8" (3mm)	1/4" (6.5mm)	9	18	1	0.86	6	5	9	0.41	0.41	0.25	0.21	55	2.32	2.34	173
			9	18	1	0.95	6	5	9	0.33	0.33	0.22	0.19	49	1.84	1.90	156
	3/16" (5mm)	1/2" (12.7mm)	5	10	0	0.71	5	4	9	0.30	0.28	0.16	0.14	36	1.68	1.58	113
			5	10	0	0.83	5	4	9	0.24	0.22	0.14	0.12	32	1.38	1.24	99
	1/4" (6mm)	1/2" (12.7mm)	3	6	0	0.50	4	4	9	0.29	0.28	0.14	0.12	32	1.67	1.57	100
			3	6	0	0.60	4	4	9	0.24	0.22	0.12	0.10	27	1.38	1.24	86
Versalux® Blue	1/4" (6mm)	1/2" (12.7mm)	21	44	9	1.33	13	8	10	0.29	0.28	0.38	0.33	80	1.67	1.57	254
			21	44	9	1.33	13	8	10	0.24	0.22	0.38	0.33	78	1.38	1.24	246
	5/16" (8mm)	1/2" (12.7mm)	18	37	7	1.28	9	7	10	0.29	0.28	0.34	0.29	72	1.66	1.57	226
			18	37	7	1.32	9	7	10	0.24	0.22	0.33	0.28	69	1.37	1.23	217
Versalux® Green	1/8" (3mm)	1/4" (6.5mm)	30	65	10	1.55	18	11	11	0.41	0.41	0.49	0.42	103	2.32	2.34	324
			30	65	10	1.55	18	11	11	0.33	0.33	0.48	0.42	101	1.84	1.90	318
	5/32" (4mm)	1/4" (6.5mm)	28	64	10	1.56	15	11	11	0.41	0.41	0.47	0.41	100	2.31	2.34	316
			28	64	10	1.60	15	11	11	0.32	0.33	0.47	0.40	98	1.84	1.89	309
	3/16" (5mm)	1/2" (12.7mm)	26	62	8	1.63	13	11	11	0.30	0.28	0.44	0.38	92	1.68	1.58	291
			26	62	8	1.63	13	11	11	0.24	0.22	0.44	0.38	90	1.38	1.24	284
	1/4" (6mm)	1/2" (12.7mm)	25	59	7	1.59	11	10	11	0.29	0.28	0.42	0.37	88	1.67	1.57	278
			25	59	7	1.64	11	10	11	0.24	0.22	0.41	0.36	86	1.38	1.24	270
Versalux® Grey	1/8" (3mm)	1/4" (6.5mm)	25	49	10	1.29	22	8	10	0.41	0.41	0.44	0.38	93	2.32	2.34	293
			25	49	10	1.32	22	8	10	0.33	0.33	0.43	0.37	91	1.84	1.90	286
	5/32" (4mm)	1/4" (6.5mm)	23	45	9	1.25	20	8	10	0.41	0.41	0.42	0.36	89	2.31	2.34	281
			23	45	9	1.29	20	8	10	0.32	0.33	0.41	0.35	87	1.84	1.89	273
	3/16" (5mm)	1/2" (12.7mm)	21	41	8	1.24	17	7	10	0.30	0.28	0.38	0.33	79	1.68	1.58	250
			21	41	8	1.28	17	7	10	0.24	0.22	0.37	0.32	77	1.38	1.24	243
	1/4" (6mm)	1/2" (12.7mm)	18	36	6	1.20	14	7	10	0.29	0.28	0.35	0.30	73	1.67	1.57	231
			18	36	6	1.24	14	7	10	0.24	0.22	0.34	0.29	71	1.38	1.24	223
Versalux® Bronze	1/8" (3mm)	1/4" (6.5mm)	27	53	9	1.36	24	9	11	0.41	0.41	0.45	0.39	96	2.32	2.34	302
			27	53	9	1.36	24	9	11	0.33	0.33	0.45	0.39	94	1.84	1.90	296
	5/32" (4mm)	1/4" (6.5mm)	25	50	8	1.35	21	8	10	0.41	0.41	0.43	0.37	92	2.31	2.34	291
			25	50	8	1.35	21	8	10	0.32	0.33	0.43	0.37	90	1.84	1.89	284
	3/16" (5mm)	1/2" (12.7mm)	23	46	7	1.35	18	8	10	0.30	0.28	0.40	0.34	83	1.68	1.58	262
			23	46	7	1.35	18	8	10	0.24	0.22	0.39	0.34	81	1.38	1.24	256
	1/4" (6mm)	1/2" (12.7mm)	20	41	6	1.28	15	7	10	0.29	0.28	0.37	0.32	78	1.67	1.57	245
			20	41	6	1.32	15	7	10	0.24	0.22	0.36	0.31	75	1.38	1.24	237

@ Air Space Filling: Light Bands Air Filled – Dark Bands Argon Filled

It is recommended tinted glass products on this page be heat treated (heat strengthened or fully tempered) to withstand solar induced thermal stress.

See Footnotes Page 26

Tinted Insulated with MSVD (Sputter) Low-E, Second Surface Coating

Versalux® Performance Characteristics - Tinted Insulated Glass - with 2nd Surface Low Emissivity Coating from Building Exterior. Emissivity of Coated Surface is .040 & Total Solar Reflectance is 44%. Clear Glass in Identical Thickness of the Tinted Substrate (Except 5/16" (8mm) has 1/4" (6mm) Clear Glass)

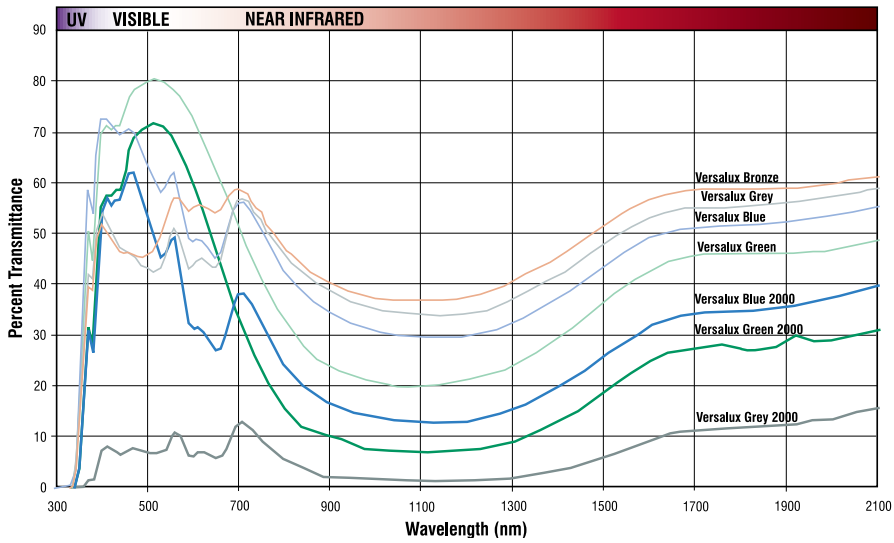
Calculated by LBNL WINDOW 5.2 v5.2.17 COMPUTER PROGRAM

PRODUCT	Glass Thickness Nominal	Air Space@ Thickness Nominal	Transmittance %			LSG Ratio	Outdoor Reflectance %		Indoor Reflectance %	Customary System Values					Metric Values		
										U-Value[a]		Shading Coefficient[b]	Solar Heat Gain Coefficient[c]	Relative Heat Gain[d] BTU Ft^2	K-Value[a]		Relative Heat Gain[d] W/m^2
	Inch (mm)	Inch (mm)	Total Solar	Visible	Ultra Violet[e]	∇	Total Solar	Visible	Visible	Winter Nighttime	Summer Daytime				Winter Nighttime	Summer Daytime	
Versalux® Blue 2000	1/4" (6mm)	1/2" (12.7mm)	15	34	3	1.47	8	6	10	0.29	0.26	0.26	0.23	56	1.64	1.48	177
			15	34	3	1.61	8	6	10	0.25	0.21	0.25	0.21	53	1.42	1.19	167
	5/16" (8mm)	1/2" (12.7mm)	11	25	2	1.32	6	5	10	0.29	0.26	0.22	0.19	47	1.64	1.48	148
			11	25	2	1.39	6	5	10	0.25	0.21	0.20	0.18	44	1.42	1.19	139
Versalux® Green 2000	1/4" (6mm)	1/2" (12.7mm)	20	53	3	1.95	7	8	11	0.29	0.26	0.31	0.27	65	1.64	1.48	205
			20	53	3	2.03	7	8	11	0.25	0.21	0.30	0.26	62	1.42	1.19	195
	5/16" (8mm)	1/2" (12.7mm)	16	46	2	1.93	6	7	11	0.29	0.26	0.27	0.24	58	1.64	1.48	183
			16	46	2	2.11	6	7	11	0.25	0.21	0.26	0.22	55	1.42	1.19	173
Versalux® Grey 2000	1/4" (6mm)	1/2" (12.7mm)	3	7	0	0.59	4	4	10	0.29	0.26	0.13	0.11	29	1.64	1.48	91
			3	7	0	0.65	4	4	10	0.25	0.21	0.11	0.10	25	1.42	1.19	79
Versalux® Blue	1/4" (6mm)	1/2" (12.7mm)	20	44	6	1.63	12	7	11	0.29	0.26	0.32	0.27	67	1.64	1.48	211
			20	44	6	1.70	12	7	11	0.25	0.21	0.30	0.26	64	1.42	1.19	202
	5/16" (8mm)	1/2" (12.7mm)	17	36	5	1.51	8	6	10	0.29	0.26	0.28	0.24	59	1.64	1.48	186
			17	36	5	1.57	8	6	10	0.25	0.21	0.26	0.23	56	1.42	1.19	177
Versalux® Green	1/4" (6mm)	1/2" (12.7mm)	24	59	5	1.97	10	9	11	0.29	0.26	0.35	0.30	74	1.64	1.48	233
			24	59	5	1.97	10	9	11	0.25	0.21	0.34	0.30	71	1.42	1.19	224
	5/16" (8mm)	1/2" (12.7mm)	21	54	4	1.94	7	8	11	0.29	0.26	0.32	0.28	68	1.64	1.48	214
			21	54	4	2.01	7	8	11	0.25	0.21	0.31	0.27	65	1.42	1.19	205
Versalux® Grey	1/4" (6mm)	1/2" (12.7mm)	17	35	5	1.47	13	6	10	0.29	0.26	0.28	0.24	60	1.64	1.48	189
			17	35	5	1.53	13	6	10	0.25	0.21	0.27	0.23	57	1.42	1.19	180
Versalux® Bronze	1/4" (6mm)	1/2" (12.7mm)	20	42	5	1.57	16	7	10	0.29	0.26	0.31	0.27	65	1.64	1.48	205
			20	42	5	1.63	16	7	10	0.25	0.21	0.30	0.26	63	1.42	1.19	199

@ Air Space Filling: Light Bands Air Filled – Dark Bands Argon Filled

It is recommended tinted glass products on this page be heat treated (heat strengthened or fully tempered) to withstand solar induced thermal stress. *See Footnotes Page 26*

Performance Characteristics



Transmission of Short Wave Length Energy of Versalux® Products Through the Solar Spectrum (1/4", 6mm).

Al Taawoun Towers - TIGERS Properties, Sharjah, UAE
Glass: VERSALUX® BLUE 2000R
Alum. Contractor: TIGER Aluminium

Versalux Reflective Glass — A Clear Reflection of Your Cost-Saving Skills

The outstanding UV and solar heat blocking capabilities of Versalux reflective glass coatings make it an ideal choice for protection against overexposure to sunlight. In fact, Versalux reflective glass can block over 93% of the sun's damaging ultraviolet rays.[1] For even greater protection, choose Versalux 2000R, which blocks up to 97% of solar ultraviolet rays.

You not only reduce air conditioning costs, but also guard against premature fading of fabrics and breakdown of plastic materials. Meanwhile, most plants and greenery flourish as vigorously as ever. For wide-range design flexibility, along with protection against solar heat and UV rays, Versalux reflective glass is the perfect choice in pyrolytically-coated glass.

Glass with Flexibility

Versalux reflective glass is also tops in versatility. Just like annealed, uncoated glass, it can be cut, drilled, laminated or made into insulated glass units without damaging the reflective surface. Versalux reflective glass can be heat-strengthened or tempered by regional fabricators. This flexibility can pay off with reduced lead times for both initial job requirements and replacement orders.

[1]From LBNL WINDOW 5.2 V5.2.17 COMPUTER ANALYSIS. (300-380 nanometers.)

All Zeledyne reflective glass products, which include three blues, three greens, grey and bronze, are available in 1/4" (6mm) thickness. Additionally, special production thicknesses including 5/16" (8mm) are available in select colors. Your Zeledyne representative can fill you in on all the details. And to see how improved thermal performance is available with all Versalux reflective glass products when fabricated into insulated glass units, just see the charts on pages 13-15.

Glass with the right chemistry

You'll find that Versalux reflective glass products are compatible with most construction sealants. They are also compatible with the silicones, polysulfides and urethanes commonly used in insulated glass manufacturing. Specific questions on compatibility should be directed to the sealant manufacturer.

Versalux R & T products can be glazed with the reflective coating facing outdoors (1st surface) or indoors (2nd surface). As with all glass surfaces, the potential for problems caused by surrounding materials such as possible staining from weathering steel or concrete should be addressed prior to installation.

The Versalux Reflective Glass Warranty

All Versalux reflective glass products carry a 10-year coating limited warranty to the direct purchaser. To get a copy, just ask your Zeledyne representative.

Reflective Monolithic

Versalux® Reflective Glass Performance Characteristics - Monolithic Glass

Calculated by LBNL WINDOW 5.2 v5.2.17 COMPUTER PROGRAM

PRODUCT	Glass Thickness Nominal	Coated Glass Surface	Exterior Appearance	Transmittance %			LSG Ratio ∇	Outdoor Reflectance %		Indoor Reflectance %	Customary System Values					Metric Values		
											U-Value[a]		Shading Coefficient[b]	Solar Heat Gain Coefficient[c]	Relative Heat Gain[d] BTU Ft^2	K-Value[a]		Relative Heat Gain[d] W/m^2
	Inch (mm)			Total Solar	Visible	Ultra Violet[e]		Total Solar	Visible	Visible	Winter Nighttime	Summer Daytime				Winter Nighttime	Summer Daytime	
Versalux® Blue 2000R	1/4" (6mm)	1	Subdued Silver Reflectance	16	16	4	0.48	27	35	9	1.02	0.92	0.39	0.33	90	5.81	5.25	284
		2▶	Blue, Low Reflectance	16	16	4	0.40	7	9	35	1.02	0.92	0.46	0.40	106	5.81	5.25	333
Versalux® Blue 2000T	1/4" (6mm)	1	Subdued Silver Reflectance	24	29	10	0.74	25	34	12	1.02	0.92	0.45	0.39	104	5.81	5.24	327
		2**	Bright Blue Reflectance	24	29	10	0.66	9	12	34	1.02	0.92	0.52	0.44	116	5.81	5.24	367
	5/16" (8mm)	1	Subdued Silver Reflectance	17	23	7	0.66	25	34	9	1.01	0.91	0.40	0.35	94	5.74	5.19	295
		2▶	Bright Blue Reflectance	17	23	7	0.58	7	9	34	1.01	0.91	0.47	0.40	108	5.74	5.19	339
Versalux® Green 2000R	1/4" (6mm)	1	Subdued Silver Reflectance	15	25	4	0.78	27	35	16	1.02	0.92	0.38	0.32	89	5.81	5.25	280
		2▶	Green, Low Reflectance	15	25	4	0.64	8	16	35	1.02	0.92	0.45	0.39	104	5.81	5.25	327
	5/16" (8mm)	1	Subdued Silver Reflectance	11	22	3	0.73	27	35	13	1.01	0.91	0.35	0.30	83	5.74	5.19	262
		2▶	Green, Low Reflectance	11	22	3	0.59	7	13	35	1.01	0.91	0.43	0.37	99	5.74	5.19	311
Versalux® Green 2000T	1/4" (6mm)	1	Subdued Silver Reflectance	24	46	9	1.15	23	33	19	1.02	0.92	0.47	0.40	106	5.81	5.25	334
		2**	Bright Blue Reflectance	24	46	9	1.05	10	19	33	1.02	0.92	0.52	0.44	116	5.81	5.25	366
	5/16" (8mm)	1	Subdued Silver Reflectance	18	41	6	1.14	23	33	16	1.01	0.91	0.43	0.36	98	5.74	5.19	309
		2▶	Bright Blue Reflectance	18	41	6	1.00	8	16	33	1.01	0.91	0.48	0.41	109	5.74	5.19	344
Versalux® Blue R	1/4" (6mm)	1	Silver, High Reflectance	27	22	9	0.55	28	35	13	1.02	0.92	0.47	0.40	107	5.81	5.25	338
		2**	Blue, Medium Reflectance	27	22	9	0.48	10	13	35	1.02	0.92	0.54	0.46	120	5.81	5.25	380
Versalux® Green R	1/4" (6mm)	1	Subdued Silver Reflectance	23	30	8	0.79	27	35	19	1.03	0.93	0.44	0.38	102	5.82	5.25	320
		2**	Green, Low Reflectance	23	30	8	0.70	10	19	35	1.03	0.93	0.51	0.43	114	5.82	5.25	361
Versalux® Grey R	1/4" (6mm)	1	Subdued Silver Reflectance	26	18	7	0.45	28	35	10	1.03	0.93	0.46	0.40	106	5.82	5.25	333
		2**	Grey, Low Reflectance	26	18	7	0.39	9	10	35	1.03	0.93	0.53	0.46	120	5.82	5.25	377
Versalux® Bronze R	1/4" (6mm)	1	Subdued Silver Reflectance	28	21	7	0.51	28	35	12	1.03	0.93	0.48	0.41	109	5.82	5.25	342
		2**	Bronze, Low Reflectance	28	21	7	0.45	9	12	35	1.03	0.93	0.55	0.47	122	5.82	5.25	385

▶ It is recommended these products be heat treated (heat strengthened or fully tempered) to withstand solar induced thermal stresses.

See Footnotes Page 26

Phoenix on the Bay, Orange Beach, AL
Glass: VERSALUX® GREEN 2000R
Architects: John M. Senkarik & Associates
Glazier: Pensacola Glass
EFCO Windows
WES THOMPSON PHOTOGRAPHY

Reflective Insulated with Clear

Versalux® Performance Characteristics - Reflective Insulated Glass: Inboard Lite 1/4" (6mm) Clear Float Glass.
Calculated by LBNL WINDOW 5.2 v5.2.17 COMPUTER PROGRAM

PRODUCT	Glass Thickness Nominal	Coated Glass Surface	Exterior Appearance	Air Space@ Thickness Nominal	Transmittance %			LSG Ratio	Outdoor Reflectance %		Indoor Reflectance %	Customary System Values					Metric Values		
												U-Value[a]		Shading Coefficient[b]	Solar Heat Gain Coefficient[c]	Relative Heat Gain[d] BTU Ft^2	K-Value[a]		Relative Heat Gain[d] W/m^2
	Inch (mm)			Inch (mm)	Total Solar	Visible	Ultra Violet[e]	∇	Total Solar	Visible	Visible	Winter Nighttime	Summer Daytime				Winter Nighttime	Summer Daytime	
Versalux® Blue 2000R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	12	15	3	0.65	28	35	15	0.47	0.50	0.27	0.23	61	2.69	2.82	191
		1			12	15	3	0.65	28	35	15	0.45	0.47	0.26	0.23	59	2.53	2.69	187
		2	Blue, Low Reflectance		13	15	3	0.56	7	9	36	0.47	0.50	0.31	0.27	69	2.69	2.82	219
		2			13	15	3	0.58	7	9	36	0.45	0.47	0.31	0.26	68	2.53	2.69	214
Versalux® Blue 2000T	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	19	26	9	0.90	26	35	17	0.47	0.50	0.34	0.29	75	2.69	2.82	236
		1			19	26	9	0.90	26	35	17	0.45	0.47	0.34	0.29	74	2.53	2.69	232
		2**	Bright Blue Reflectance		19	27	9	0.84	9	12	35	0.47	0.50	0.38	0.32	82	2.69	2.82	258
		2**			19	27	9	0.84	9	12	35	0.45	0.47	0.37	0.32	81	2.53	2.69	254
	5/16" (8mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	14	20	5	0.80	25	34	15	0.47	0.49	0.29	0.25	64	2.67	2.80	202
		1			14	20	5	0.83	25	34	15	0.44	0.47	0.28	0.24	63	2.52	2.67	198
		2	Bright Blue Reflectance		14	21	6	0.75	7	9	35	0.47	0.49	0.33	0.28	72	2.67	2.80	227
		2			14	21	6	0.78	7	9	35	0.44	0.47	0.32	0.27	70	2.52	2.67	222
Versalux® Green 2000R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	12	23	3	1.00	28	35	20	0.47	0.50	0.26	0.23	60	2.69	2.82	189
		1			12	23	3	1.05	28	35	20	0.45	0.47	0.26	0.22	59	2.53	2.69	185
		2	Green, Low Reflectance		13	23	3	0.88	8	16	36	0.47	0.50	0.31	0.26	68	2.69	2.82	214
		2			13	23	3	0.88	8	16	36	0.45	0.47	0.30	0.26	66	2.53	2.69	210
	5/16" (8mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	9	20	2	1.00	27	35	19	0.47	0.49	0.23	0.20	54	2.67	2.80	169
		1			9	20	2	1.00	27	35	19	0.44	0.47	0.23	0.20	52	2.52	2.67	165
		2	Green, Low Reflectance		9	20	2	0.83	7	14	36	0.47	0.49	0.28	0.24	62	2.67	2.81	197
		2			9	20	2	0.87	7	14	36	0.44	0.47	0.27	0.23	61	2.52	2.67	192
Versalux® Green 2000T	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	20	42	7	1.40	23	35	24	0.47	0.50	0.35	0.30	77	2.69	2.82	242
		1			20	42	7	1.40	23	35	24	0.45	0.47	0.35	0.30	76	2.53	2.69	239
		2	Green, Low Reflectance		20	42	8	1.31	10	21	35	0.47	0.50	0.38	0.32	83	2.69	2.82	261
		2			20	42	8	1.31	10	21	35	0.45	0.47	0.37	0.32	81	2.53	2.69	256
	5/16" (8mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	16	37	5	1.42	23	34	21	0.47	0.49	0.31	0.26	68	2.67	2.80	215
		1			16	37	5	1.42	23	34	21	0.44	0.47	0.30	0.26	67	2.52	2.67	211
		2	Green, Low Reflectance		16	37	5	1.28	9	18	34	0.47	0.49	0.34	0.29	75	2.67	2.80	235
		2			16	37	5	1.28	9	18	34	0.44	0.47	0.33	0.29	73	2.52	2.67	230
Versalux® Blue R	1/4" (6mm)	1	Silver, High Reflectance	1/2" (12.7mm)	21	19	7	0.61	28	35	18	0.47	0.50	0.36	0.31	79	2.69	2.82	248
		1			21	19	7	0.61	28	35	18	0.45	0.47	0.36	0.31	78	2.53	2.69	245
		2**	Blue, Medium Reflectance		21	20	7	0.59	10	13	36	0.47	0.50	0.40	0.34	86	2.69	2.82	272
		2**			21	20	7	0.59	10	13	36	0.45	0.47	0.39	0.34	85	2.43	2.69	268
Versalux® Green R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	19	27	6	0.93	28	36	24	0.47	0.50	0.33	0.29	73	2.69	2.82	231
		1			19	27	6	0.96	28	36	24	0.45	0.47	0.33	0.28	72	2.53	2.69	228
		2**	Green, Low Reflectance		19	27	6	0.84	11	20	36	0.47	0.50	0.37	0.32	81	2.69	2.82	254
		2**			19	27	6	0.87	11	20	36	0.45	0.47	0.36	0.31	79	2.53	2.69	250
Versalux® Grey R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	20	16	6	0.53	28	35	16	0.47	0.50	0.35	0.30	77	2.69	2.82	242
		1			20	16	6	0.53	28	35	16	0.45	0.47	0.35	0.30	76	2.53	2.69	239
		2**	Grey, Low Reflectance		20	16	6	0.47	9	10	36	0.47	0.50	0.39	0.34	85	2.69	2.82	268
		2**			20	16	6	0.48	9	10	36	0.45	0.47	0.39	0.33	84	2.53	2.69	264
Versalux® Bronze R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	21	19	5	0.59	28	35	17	0.47	0.50	0.37	0.32	80	2.69	2.82	252
		1			21	19	5	0.61	28	35	17	0.45	0.47	0.36	0.31	79	2.53	2.69	249
		2**	Bronze, Low Reflectance		22	19	5	0.54	10	12	36	0.47	0.50	0.40	0.35	88	2.69	2.82	277
		2**			22	19	5	0.56	10	12	36	0.45	0.47	0.40	0.34	87	2.53	2.69	273

@ Air Space Filling: Light Bands Air Filled – Dark Bands Argon Filled

** May require heat treating to withstand solar induced thermal stresses when the reflective coating is glazed towards building interior.

It is recommended these products be heat treated (heat strengthened or fully tempered) to withstand solar induced thermal stresses.

See Footnotes Page 26

Reflective Insulated with Pyrolytic Low-E

Versalux® Performance Characteristics - Reflective Insulated Glass - Pyrolytic Low Emissivity Coated Clear Glass is 1/4" (6mm) in Thickness. Low Emissivity Coating on 3rd Glass Surface from Building Exterior. Emissivity of Low-E Coated Surface is .157 & Total Solar Reflectance is 11%.

Calculated by LBNL WINDOW 5.2 v5.2.17 COMPUTER PROGRAM

PRODUCT	Glass Thickness Nominal	Coated Glass Surface	Exterior Appearance	Air Space@ Thickness Nominal	Transmittance %			LSG Ratio ∇	Outdoor Reflectance %		Indoor Reflectance %	Customary System Values					Metric Values		
												U-Value[a]		Shading Coefficient[b]	Solar Heat Gain Coefficient[c]	Relative Heat Gain[d] BTU Ft^2	K-Value[a]		Relative Heat Gain[d] W/m^2
	Inch (mm)			Inch (mm)	Total Solar	Visible	Ultra Violet[e]		Total Solar	Visible	Visible	Winter Nighttime	Summer Daytime				Winter Nighttime	Summer Daytime	
Versalux® Blue 2000R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	10	14	3	0.74	28	35	16	0.33	0.33	0.22	0.19	48	1.88	1.86	151
		1			10	14	3	0.78	28	35	16	0.29	0.28	0.21	0.18	45	1.62	1.58	143
		2⚑	Blue, Low Reflectance		10	14	3	0.67	7	10	34	0.33	0.33	0.25	0.21	54	1.88	1.86	169
		2⚑			10	14	3	0.70	7	10	34	0.29	0.28	0.23	0.20	51	1.62	1.58	159
Versalux® Blue 2000T	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	16	24	7	0.96	26	35	18	0.33	0.33	0.29	0.25	62	1.88	1.86	196
		1			16	24	7	1.00	26	35	18	0.29	0.28	0.28	0.24	60	1.62	1.58	190
		2**	Bright Blue Reflectance		16	25	7	0.93	10	13	34	0.33	0.33	0.31	0.27	67	1.88	1.86	212
		2**			16	25	7	0.96	10	13	34	0.29	0.28	0.30	0.26	65	1.62	1.58	203
	5/16" (8mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	11	19	4	0.95	26	35	16	0.33	0.33	0.23	0.20	51	1.87	1.85	161
		1			11	19	4	1.00	26	35	16	0.29	0.28	0.22	0.19	49	1.62	1.57	153
		2⚑	Bright Blue Reflectance		12	19	4	0.86	7	9	34	0.33	0.33	0.26	0.22	57	1.87	1.85	178
		2⚑			12	19	4	0.90	7	9	34	0.29	0.28	0.25	0.21	53	1.62	1.57	168
Versalux® Green 2000R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	10	21	3	1.17	28	36	21	0.33	0.33	0.21	0.18	47	1.88	1.86	149
		1			10	21	3	1.17	28	36	21	0.29	0.28	0.21	0.18	45	1.62	1.58	141
		2⚑	Green, Low Reflectance		10	22	3	1.05	8	16	35	0.33	0.33	0.24	0.21	53	1.88	1.86	167
		2⚑			10	22	3	1.10	8	16	35	0.29	0.28	0.23	0.20	50	1.62	1.58	156
	5/16" (8mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	8	19	2	1.19	28	35	19	0.33	0.33	0.18	0.16	41	1.87	1.85	130
		1			8	19	2	1.27	28	35	19	0.29	0.28	0.17	0.15	39	1.62	1.57	121
		2⚑	Green, Low Reflectance		8	19	2	1.06	7	14	34	0.33	0.33	0.21	0.18	47	1.87	1.85	148
		2⚑			8	19	2	1.12	7	14	34	0.29	0.28	0.20	0.17	44	1.62	1.57	137
Versalux® Green 2000T	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	17	39	6	1.50	24	35	23	0.33	0.33	0.30	0.26	64	1.88	1.86	203
		1			17	39	6	1.56	24	35	23	0.29	0.28	0.29	0.25	62	1.62	1.58	196
		2⚑	Green, Low Reflectance		18	39	6	1.39	11	22	33	0.33	0.33	0.32	0.28	68	1.88	1.86	216
		2⚑			18	39	6	1.44	11	22	33	0.29	0.28	0.31	0.27	66	1.62	1.58	207
	5/16" (8mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	14	34	4	1.55	23	35	21	0.33	0.33	0.26	0.22	56	1.87	1.85	175
		1			14	34	4	1.62	23	35	21	0.29	0.28	0.25	0.21	53	1.62	1.58	167
		2⚑	Green, Low Reflectance		14	35	4	1.46	9	18	33	0.33	0.33	0.28	0.24	60	1.87	1.85	189
		2⚑			14	35	4	1.52	9	18	33	0.29	0.28	0.27	0.23	57	1.62	1.58	179
Versalux® Blue R	1/4" (6mm)	1	Silver, High Reflectance	1/2" (12.7mm)	17	18	6	0.67	29	35	19	0.33	0.33	0.31	0.27	66	1.88	1.86	209
		1			17	18	6	0.69	29	35	19	0.29	0.28	0.30	0.26	64	1.62	1.58	203
		2**	Blue, Medium Reflectance		17	18	6	0.62	11	13	34	0.33	0.33	0.34	0.29	72	1.88	1.86	226
		2**			17	18	6	0.64	11	13	34	0.29	0.28	0.33	0.28	69	1.62	1.58	218
Versalux® Green R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	15	25	5	1.04	28	36	23	0.33	0.33	0.28	0.24	61	1.88	1.86	192
		1			15	25	5	1.04	28	36	23	0.29	0.28	0.28	0.24	59	1.62	1.58	186
		2**	Green, Low Reflectance		16	25	5	0.96	11	20	35	0.33	0.33	0.31	0.26	66	1.88	1.86	208
		2**			16	25	5	0.96	11	20	35	0.29	0.28	0.30	0.26	63	1.62	1.58	199
Versalux® Grey R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	16	15	5	0.58	29	35	17	0.33	0.33	0.30	0.26	64	1.88	1.86	203
		1			16	15	5	0.60	29	35	17	0.29	0.28	0.29	0.25	63	1.62	1.58	197
		2**	Grey, Low Reflectance		16	15	5	0.54	10	10	34	0.33	0.33	0.33	0.28	70	1.88	1.86	220
		2**			16	15	5	0.56	10	10	34	0.29	0.28	0.32	0.27	67	1.62	1.58	213
Versalux® Bronze R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	17	17	4	0.63	29	35	18	0.33	0.33	0.32	0.27	68	1.88	1.86	213
		1			17	17	4	0.63	29	35	18	0.29	0.28	0.31	0.27	66	1.62	1.58	208
		2**	Bronze, Low Reflectance		17	18	4	0.60	11	12	34	0.33	0.33	0.34	0.30	73	1.88	1.86	230
		2**			17	18	4	0.62	11	12	34	0.29	0.28	0.33	0.29	71	1.62	1.58	223

@ Air Space Filling: Light Bands Air Filled – Dark Bands Argon Filled

** May require heat treating to withstand solar induced thermal stresses when the reflective coating is glazed towards building interior.

⚑ It is recommended these products be heat treated (heat strengthened or fully tempered) to withstand solar induced thermal stresses.

See Footnotes Page 26

Reflective Insulated w/MSVD (Sputter) Low-E

Versalux® Performance Characteristics - Insulated Glass - MSVD (Sputter) Low Emissivity Coated Clear Glass is 1/4" (6mm) in Thickness. Emissivity of Low-E Coated Surface is .043 & Total Solar Reflectance is 43%. Low E Coating is on 3rd Glass Surface from Building Exterior.

Calculated by LBNL WINDOW 5.2 v5.2.17 COMPUTER PROGRAM

PRODUCT	Glass Thickness Nominal Inch (mm)	Coated Glass Surface	Exterior Appearance	Air Space@ Thickness Nominal Inch (mm)	Transmittance % Total Solar	Transmittance % Visible	Transmittance % Ultra Violet[e]	LSG Ratio ▽	Outdoor Reflectance% Total Solar	Outdoor Reflectance% Visible	Indoor Reflectance % Visible	Customary System Values U-Value[a] Winter Nighttime	Customary System Values U-Value[a] Summer Daytime	Shading Coefficient[b]	Solar Heat Gain Coefficient[c]	Relative Heat Gain[d] BTU Ft^2	Metric Values K-Value[a] Winter Nighttime	Metric Values K-Value[a] Summer Daytime	Relative Heat Gain[d] W/m^2
Versalux® Blue 2000R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	6	13	1	1.00	29	35	12	0.29	0.28	0.16	0.13	35	1.67	1.57	111
		1			6	13	1	1.08	29	35	12	0.24	0.22	0.14	0.12	32	1.38	1.24	101
		2	Blue, Low Reflectance		6	13	1	0.81	9	9	28	0.29	0.28	0.18	0.16	40	1.67	1.57	126
		2			6	13	1	0.93	9	9	28	0.24	0.22	0.17	0.14	36	1.38	1.24	114
Versalux® Blue 2000T	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	11	23	3	1.21	27	35	14	0.29	0.28	0.22	0.19	48	1.67	1.57	152
		1			11	23	3	1.28	27	35	14	0.24	0.22	0.21	0.18	45	1.38	1.24	143
		2**	Bright Blue Reflectance		11	23	3	1.10	11	12	27	0.29	0.28	0.24	0.21	52	1.67	1.57	165
		2**			11	23	3	1.15	11	12	27	0.24	0.22	0.23	0.20	49	1.38	1.24	154
	5/16" (8mm)	1	Subdued Silver Reflectance		8	18	2	1.13	26	34	12	0.29	0.28	0.19	0.16	41	1.66	1.57	130
		1			8	18	2	1.20	26	34	12	0.24	0.22	0.18	0.15	38	1.37	1.23	120
		2	Bright Blue Reflectance		8	18	2	1.00	8	9	27	0.29	0.28	0.21	0.18	46	1.66	1.57	144
		2			8	18	2	1.06	8	9	27	0.24	0.22	0.19	0.17	42	1.37	1.23	132
Versalux® Green 2000R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	8	20	1	1.33	28	35	16	0.29	0.28	0.17	0.15	38	1.67	1.57	121
		1			8	20	1	1.43	28	35	16	0.24	0.22	0.16	0.14	35	1.38	1.24	111
		2**	Green, Low Reflectance		8	20	1	1.18	9	16	28	0.29	0.28	0.20	0.17	43	1.67	1.57	136
		2**			8	20	1	1.25	9	16	28	0.24	0.22	0.18	0.16	39	1.38	1.24	123
	5/16" (8mm)	1	Subdued Silver Reflectance		6	18	1	1.38	28	35	15	0.29	0.28	0.16	0.13	35	1.66	1.57	110
		1			6	18	1	1.50	28	35	15	0.24	0.22	0.14	0.12	32	1.37	1.23	100
		2	Green, Low Reflectance		6	18	1	1.20	7	14	28	0.29	0.28	0.18	0.15	40	1.66	1.57	125
		2			6	18	1	1.29	7	14	28	0.24	0.22	0.16	0.14	36	1.37	1.23	112
Versalux® Green 2000T	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	14	36	3	1.64	24	34	18	0.29	0.28	0.26	0.22	55	1.67	1.57	174
		1			14	36	3	1.71	24	34	18	0.24	0.22	0.25	0.21	52	1.38	1.24	165
		2	Green, Low Reflectance		14	37	3	1.54	11	21	27	0.29	0.28	0.27	0.24	58	1.67	1.57	184
		2			14	37	3	1.61	11	21	27	0.24	0.22	0.26	0.23	55	1.38	1.23	173
	5/16" (8mm)	1	Subdued Silver Reflectance		11	32	2	1.60	23	34	17	0.29	0.28	0.23	0.20	49	1.66	1.57	155
		1			11	32	2	1.68	23	34	17	0.24	0.22	0.22	0.19	46	1.37	1.23	145
		2	Green, Low Reflectance		12	33	2	1.57	9	17	27	0.29	0.28	0.24	0.21	53	1.66	1.57	166
		2			12	33	2	1.65	9	17	27	0.24	0.22	0.23	0.20	49	1.37	1.23	155
Versalux® Blue R	1/4" (6mm)	1	Silver, High Reflectance	1/2" (12.7mm)	9	17	2	1.00	33	35	14	0.29	0.28	0.20	0.17	43	1.67	1.57	136
		1			9	17	2	1.06	33	35	14	0.24	0.22	0.19	0.16	41	1.38	1.24	128
		2**	Blue, Medium Reflectance		9	17	2	0.89	15	13	28	0.29	0.28	0.22	0.19	48	1.67	1.57	151
		2**			9	17	2	0.94	15	13	28	0.24	0.22	0.21	0.18	45	1.38	1.24	141
Versalux® Green R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	10	23	2	1.28	30	36	18	0.29	0.28	0.21	0.18	45	1.67	1.57	142
		1			10	23	2	1.35	30	36	18	0.24	0.22	0.20	0.17	42	1.38	1.24	133
		2**	Green, Low Reflectance		10	23	2	1.15	13	20	28	0.29	0.28	0.23	0.20	49	1.67	1.57	156
		2**			10	23	2	1.21	13	20	28	0.24	0.22	0.21	0.19	46	1.38	1.24	145
Versalux® Grey R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	8	14	2	0.88	33	35	13	0.29	0.28	0.18	0.16	41	1.67	1.57	128
		1			8	14	2	0.93	33	35	13	0.24	0.22	0.17	0.15	38	1.38	1.24	119
		2**	Grey, Low Reflectance		8	14	2	0.78	15	10	28	0.29	0.28	0.21	0.18	45	1.67	1.57	143
		2**			8	14	2	0.82	15	10	28	0.24	0.22	0.20	0.17	42	1.38	1.24	132
Versalux® Bronze R	1/4" (6mm)	1	Subdued Silver Reflectance	1/2" (12.7mm)	9	16	2	0.94	34	35	14	0.29	0.28	0.19	0.17	43	1.67	1.57	134
		1			9	16	2	1.00	34	35	14	0.24	0.22	0.18	0.16	40	1.38	1.24	126
		2**	Bronze, Low Reflectance		9	17	2	0.89	16	12	28	0.29	0.28	0.22	0.19	47	1.67	1.57	149
		2**			9	17	2	0.94	16	12	28	0.24	0.22	0.21	0.18	44	1.38	1.24	139

@ Air Space Filling: Light Bands Air Filled – Dark Bands Argon Filled

** May require heat treating to withstand solar induced thermal stresses when the reflective coating is glazed towards building interior.

It is recommended these products be heat treated (heat strengthened or fully tempered) to withstand solar induced thermal stresses.

See Footnotes Page 26

Florida Model Lighting Ordinance For Marine Turtle Protection ("Turtle Glass")

Development along the Florida coastline requires special consideration when designing and constructing a building – the safety of indigenous marine turtle hatchlings. It has been discovered that light shining brightly from buildings within line of sight of the seashore attracts marine turtle hatchlings away from their natural environment at sea.

Due to the phenomena, the Florida Model Lighting Ordinance for Marine Turtle Protection requires architectural glass to transmit no more than 45% of the light from inside coastal buildings. Originally, Versalux® Blue 2000 was intended to transmit more than 45% of interior light, but research indicated that a darker blue glass would not only better serve environmental needs, it would be more attractive. The resulting Versalux® Blue 2000, by transmitting only 43% of light, complies with the coastal lighting code and has been specified for numerous Florida Atlantic Ocean and Gulf Coast buildings. Since the introduction of Versalux® Blue 2000, additional products have been developed by Zeledyne that comply with the ordinance as shown in the chart below.

Calculated by LBNL WINDOW 5.2 v5.2.17 COMPUTER PROGRAM

PRODUCT	Glass Thickness Nominal Inch (mm)	Product Type	Coated Glass Surface	Transmittance %			Outdoor Reflectance %		Indoor Reflectance %	Customary System Values					Metric Values		
										U-Value[a]		Shading Coefficient[b]	Solar Heat Gain Coefficient[c]	Relative Heat Gain[d] BTU Ft²	K-Value[a]		Relative Heat Gain[d] W/m²
				Total Solar	Visible	Ultra Violet[e]	Total Solar	Visible	Visible	Winter Nighttime	Summer Daytime				Winter Nighttime	Summer Daytime	
Versalux® Blue 2000	1/4" (6mm)	Tinted	–	30	43	14	5	5	5	1.02	0.92	0.59	0.50	130	5.81	5.25	410
	5/16" (8mm)	Tinted	–	22	33	9	4	5	5	1.01	0.91	0.52	0.44	117	5.74	5.19	369
Versalux® Blue 2000R	1/4" (6mm)	Tinted Reflective	1	16	16	4	27	35	9	1.02	0.92	0.39	0.33	90	6.81	5.25	284
		Tinted Reflective	2	16	16	4	7	9	35	1.02	0.92	0.46	0.40	106	5.81	5.25	333
Versalux® Blue 2000T	1/4" (6mm)	Tinted Reflective	1	24	29	10	25	34	12	1.02	0.92	0.45	0.39	104	5.81	5.24	327
		Tinted Reflective	2**	24	29	10	9	12	34	1.02	0.92	0.52	0.44	116	5.81	5.24	367
	5/16" (8mm)	Tinted Reflective	1	17	23	7	25	34	9	1.01	0.91	0.40	0.35	94	5.74	5.19	295
		Tinted Reflective	2	17	23	7	7	9	34	1.01	0.91	0.47	0.40	108	5.74	5.19	339
Versalux® Green 2000R	1/4" (6mm)	Tinted Reflective	1	15	25	4	27	35	16	1.02	0.92	0.38	0.32	89	5.81	5.25	280
		Tinted Reflective	2	15	25	4	8	16	35	1.02	0.92	0.45	0.39	104	5.81	5.25	327
	5/16" (8mm)	Tinted Reflective	1	11	22	3	27	35	13	1.01	0.91	0.35	0.30	83	5.74	5.19	262
		Tinted Reflective	2	11	22	3	7	13	35	1.01	0.91	0.43	0.37	99	5.74	5.19	311
Versalux® Green 2000T	5/16" (8mm)	Tinted Reflective	1	18	41	6	23	33	16	1.01	0.91	0.43	0.36	98	5.74	5.19	309
		Tinted Reflective	2	18	41	6	8	16	33	1.01	0.91	0.48	0.41	109	5.74	5.19	344

* Complies with Florida Model Lighting Ordinance for Marine Turtle Protection (Florida Statutes, Section 161.163, Chp 62B-55.)

** May require heat treating to withstand solar induced thermal stresses when the reflective coating is glazed towards building interior.

It is recommended these products be heat treated (heat strengthened or fully tempered) to withstand solar induced thermal stresses.

See Footnotes on Page 26

Product Availability

All Zeledyne Versalux® products are readily available and can be field fabricated by regional independent fabricators to reduce lead times and minimize construction delays.

As with any glass product manufactured with a coating, it is recommended that a mock-up be viewed by the design professional and building owner prior to final product selection. All Zeledyne Float Glass types meet manufacturing tolerances within applicable provisions of ASTM C 1036-2001 Standard Specification For Flat Glass.

It should be noted that all warranty statements disclaim any Zeledyne liability for breakage, replacement costs, and incidental, special, or consequential damages.

Tempering Considerations

Blue, green, grey, and bronze tinted glass have heat-absorbing characteristics and retain heat as part of the absorption process. Zeledyne Versalux reflective glass, with the coating on the second surface of heat-absorbing glass, absorbs increased amounts of solar energy and may require heat-strengthening or tempering to reduce the possibility of thermal breakage.

Uniform Load Data

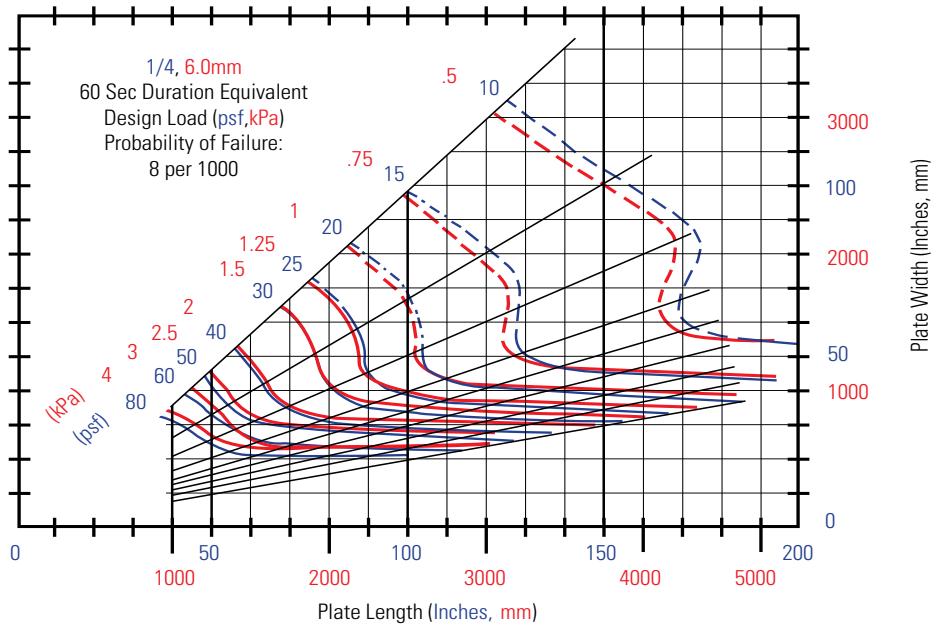
Design professionals should review and adhere to all applicable national, state, and local building codes and regulations when selecting glass design load factors.

Uniform Load Data: Additional Factors

- *Type of Exposure*
- *Building Height*
- *Orientation*
- *Wind Gusting*
- *Shape*
- *Safety Glazing Requirements*

Chart A

Glass supported on four sides (Uniform Load kPa)



Uniform Load/Glass Strength Tables

Charts A and ***C*** may be used to determine the adequacy of a glass substrate of the indicated thicknesses to withstand a uniform static load for a 60 second duration. The wind load buildings are exposed to is neither static nor uniform. It is the design professional's responsibility to translate a project's specified wind or design loads into uniform static loads of a 60 second duration equivalent.

Four-Side Support

Chart A may be used to determine maximum permissible annealed glass sizes at Indicated Design Loads expressed in Uniform Pounds Per Sq. Ft. for 1/4" (6.0mm) thick glass. This four-side support chart is based on glass supported on all four sides, a design factor of 2.5, and a probability of failure rate of 8 lites per 1,000.

Example: Glass Size: 65" x 90"

- Locate the 90" line on the horizontal scale.
- Determine the location of the 65" dimension between the 60" and 70" lines on the vertical scale.
- Locate the intersection of a vertical line emanating from the 90" location on the horizontal scale and a horizontal line drawn from the location of 65" on the vertical scale.
- Draw a line from the 0 point at the junction of the horizontal and vertical scales until it intersects the previously determined point (between the 20 lb. and the 25 lb. lines.)
- Interpolate the point between the 20 lb. and 25 lb. lines.
- Maximum load example lite of glass will withstand with probability of failure rate of 8 lites per 1,000 is 22 PSF.

The dotted lines on the chart indicate points at which center of glass deflection will be 3/4" or greater. Strength of glass charts for additional thicknesses of glass may be found in ASTM E 1300 - 94 Standard Practice for Determining the Maximum Thickness and Type of Glass to Resist a Specified Load. ASTM E 1300-94 is available from the American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103.

Four-Side Support

Assuming annealed monolithic glass to have a factor of 1, the multiplying factors shown in ***Chart B*** may be used to determine the approximate uniform load strength of further fabricated glass.*

Multiplying factors should not be used in combination, nor should they be used with the two-side support chart.

Heat strengthened and fully tempered glass will withstand greater uniform loads than annealed glass. Deflection characteristics, however, are the same for identical thicknesses of annealed, heat strengthened, or annealed substrates.

National and local building codes and regulations for wind load and safety requirements set forth the minimums that must be met, but do not necessarily represent the most current product availability for wind load factors.

GANA (Glass Association of North America) "Glazing Manual, 2004 edition/ASCE Standard 7-95" and many other publications offer insight into the many facets constituting design load.

Chart B

Multiplying Factor of Glass Types

GLASS TYPE	MULTIPLYING† FACTOR
Monolithic Fully Tempered	4.0
Monolithic Heat Strengthened	2.0
Insulated Glass (Both Lites Fully Tempered)	7.2
Insulated Glass (Both Lites Heat Strengthened)	3.6
Insulated Glass (Both Lites Annealed)	1.8

† Center of glass deflection under specified loads must additionally be considered in selection proper glass thicknesses and types. Data for laminated glass products may be located in ASTM E 1300 - 94.

** All lites must be identical thickness of annealed lite.*

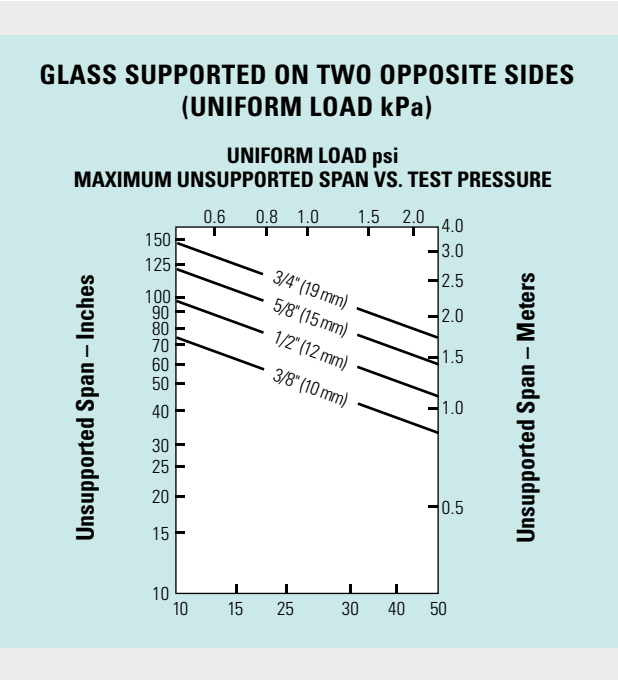


Chart C

Glass Supported on Two Opposite Sides

Two-Side Support

Glazing that is framed or otherwise supported on only two opposite horizontal (sill and head) sides must be considered separately from four-side supported glazing in determining the correct glass thickness to meet the specified uniform load. For this condition, glass strength is dependent only on the glass thickness and the length of the unsupported span. For two-sided support conditions, only monolithic annealed or tempered glass should be used. Using tempered glass in lieu of annealed glass of the same thickness increases the allowable unsupported span by a factor of two.** The proper glass thickness to meet the desired uniform load for a given unsupported span can be selected by referring to the two-side support graph.

Glass deflection under wind loading is more pronounced with two-side supported glass. A glass thickness that is sufficient to meet a given uniform load may exhibit deflection that is aesthetically unacceptable or psychologically bothersome to building occupants. Deflection can be reduced only by increasing the thickness for a given size lite of glass.

*** Applications using this factor must be closely evaluated to ensure anticipated center of glass deflection at the specified design load is limited to an acceptable degree.*

Thermal Stresses

When glass is exposed to sunlight, solar energy is absorbed, causing the glass temperature to rise. The rate at which glass temperature rises is dependent on the type and thickness of glass used. If the glass is not properly thermally isolated from the glass-framing system, or if it is glazed directly into a high heat capacity material such as concrete, the temperature of the glass edges may be significantly lower than that of the center portion of the glass.

Glass, like most materials, expands with increased temperature levels. The hotter center portion of the glass expands more than the cooler glass edges, creating thermally-induced stresses at the glass edges. Thermal stresses are normally greatest at the center of each edge, diminishing toward the corners

Higher thermal stress may cause glass breakage unless proper cutting and glazing practices are followed. Proper design of the glazing system (reference Glazing Guidelines on Page 24) can reduce thermal and mechanical stresses. The ability of Versalux® products to resist breakage, due to both thermal and mechanical stresses, depends to a great degree on the edge strength of the glass. Clean-cut edges provide the greatest possible strength in glazed, tinted or reflective glass.

Under abnormal conditions where thermal stress increases breakage risk, resistance to thermal stress of a lite of glass can be increased by heat treating the substrate (heat strengthened or fully tempered). Heat treating also improves the glass product's ability to withstand higher uniform loads (refer to uniform load data above). Although heat treating the glass increases its strength, it does not alter

its deflection characteristics. Annealed, heat strengthened, and fully tempered substrates of the same thickness size will deflect under load at the same rate.

The thickness of a glass substrate may have to be increased for a given uniform load to limit center line deflection to an acceptable degree. Fully tempered glass, on occasion, can experience spontaneous breakage due to melting inclusions which can occur during the glass making process. Although the risk of spontaneous breakage is remote, architects and design professionals should consider other alternatives if glass fallout is a concern.

Interior Heat Traps

A heat trap on the interior surface of the glass exists when there is inadequate air circulation to properly remove heat that can build up behind the glass. This condition can cause temperature differences within the lite of glass and subsequent thermal stresses that may not be acceptable with annealed glass.

Spandrels: An example of a severe heat trap condition would be the spandrel area of a building. The space behind a lite of spandrel glass is blocked off to prevent airflow between floors. The temperature in this space will continue to rise when the spandrel glass is subjected to solar loading. It is for this reason that spandrel glass is tempered to increase the resistance of the glass to thermal breakage.

Vision Areas: In vision areas, there is generally air movement across the inboard surface of the glass. If this air movement is restricted to a great degree, a heat trap situation similar to that created in the spandrel area can occur.

Suspended Ceiling Soffits: Suspended ceiling soffits must be positioned well to the room side to allow for natural convection. If the building design is such that natural convection cannot be provided, the head area should include vents that provide a minimum of one square inch of ventilation for each inch of glass width, or the glass should be heat treated (***Chart D***).

Interior Shading Devices and Heat Outlets: The positioning of interior shading devices is a very important consideration in achieving adequate air movement across the interior surface of the glass. Draperies, roller shades, or venetian blinds should be positioned away from the glass to prevent restriction of airflow. A minimum clearance of 2" (50mm) should be provided between the inboard glass surface and the shading device. Also, a clearance must be provided between the shading device and the glass-framing members. A minimum clearance of 1-1/2" (38mm) should be provided at the top and bottom of the shading device to ensure adequate air movement. (***Chart D***)

If these clearances cannot be provided, in the case of venetian blinds, a lockout device should be used to limit the rotation of the blinds. This lockout device acts as a positive stop to prevent the blinds from being completely closed. For horizontal venetian blinds, the

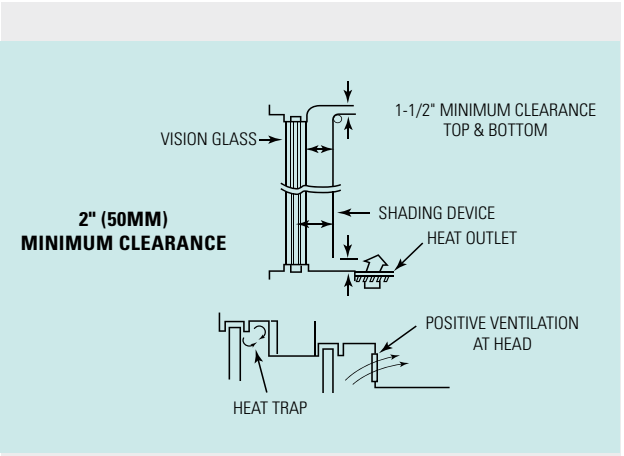


CHART D
Minimum Clearance

Seneca Casino
Glass: VERSALUX® BLUE, GREEN, AND GREEN 2000
Architects: JCJ Architecture
Fabricator: Viracon
Glazier: CBO Glass

rotation of the blinds should be limited to a position of 60° off of the most closed position. For vertical blinds, the movement should be limited so that there is a 1/2" (12mm) space between the blinds when they are in the most closed position.

Care must also be exercised in the location and position of heat outlets. The outlets should be designed to direct hot air away from the inboard glass surface to prevent increasing the temperature difference between the center and the edge of the glass. When shading devices are used, the heat outlet should not be positioned between the glass and the shading device, but rather to the room side of the shading device. When buildings are located in cold climates, care should be exercised to prevent hot air from being directed toward the glass when the heating system is initially activated during periods of low temperature.

Glass that will be glazed into areas containing heat traps should be heat treated to reduce the possibility of thermally induced breakage.

Expansion Joints and Anchors

The architect or engineer should precisely define the anticipated movement of the building's structure due to temperature changes, static loads, wind loads, and other dynamic loads.

- Window or curtain wall expansion joints and anchors should be designed so that loads due to types of building movement are not transferred to the glass framing members.
- Anchors must be designed to positively locate the glass framing while providing for the anticipated movement.
- It is very important that expansion joints not be located adjacent to the edge of an insulating glass unit.
- Expansion joints to accommodate vertical movements should be provided for each floor.
- Expansion joints to accommodate horizontal movements should be located at each vertical framing unit with a maximum spacing of 20 feet (6.1m).

Thermal Movement: Movement of glass framing members due to thermal expansion and contraction is a function of temperature and the thermal expansion properties of the glass-holding members. Therefore, this movement can be calculated for a specific system and it must be considered in design and erection. The system should be designed to permit erection with the expansion joints almost fully open in cold weather and nearly closed in hot weather.

Deflection of Glass Framing Members

The deflection of the glass framing members when subjected to design loads must not exceed the length of the unsupported span divided by 175 or 3/4" (19mm), whichever is less. The deflection of horizontal glass framing members due to the weight of the glass should be limited to prevent inadequate edge clearance and to minimize increased bite on the glass and consequently added thermal stress. A limit of 1/8" (3mm) or 25% of the design edge clearance of the glass or panel below, whichever is less, is recommended. It is also recommended that twisting or

rotation of the horizontal members due to the dead weight of the glass be limited to 1" from the horizontal plane (*Chart E*).

Glass Openings

The glass framing system must both structurally support and adequately cushion the glass. To prevent mechanical and thermal stresses on the glass, the framing system should provide openings that are within specified tolerances for squareness, corner offset and bow. These tolerances are listed below:

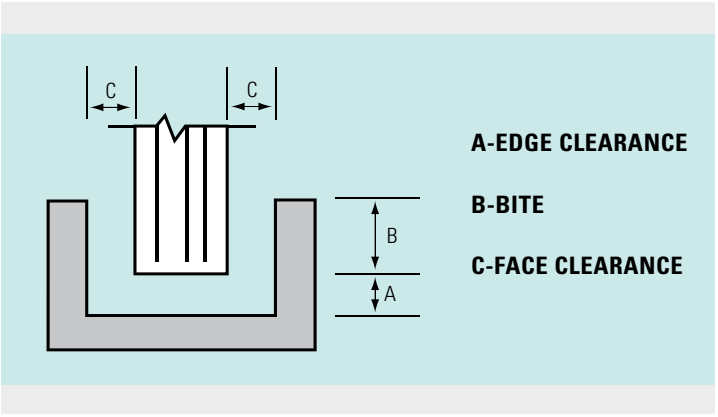
- ***Squareness*** - 1/8" (3mm) difference in the lengths of the diagonals.
- ***Corner Offset*** - 1/32" (0.8mm) maximum offset at corners.
- ***Bow*** - 1/16" (1.6mm) bow in a 4 ft. (1.22m) length of framing.

If variations from these tolerances are anticipated, details of the system should be submitted to a Zeledyne Glass representative for technical review. If job site conditions are found to ± outside these tolerances, corrections must be made before the openings are glazed.

Setting Blocks

Glass should be set on two identical setting blocks with a Shore A durometer hardness of 85±5.

The setting blocks should always be equidistant from the center line of the glass. The setting blocks preferably should be centered at the bottom quarter points of the glass. When the wall design does not allow the setting blocks to be positioned at the quarter points, they can be moved so that the end closest to the vertical glass edge is within a distance equal to 1/8 the glass width or 6" (152mm), whichever is greater.



Each setting block should be sized to provide 0.1" of length per square foot (27mm per square meter) of glass area, but not less than 4" (102mm) of length.

The setting block should be 1/16" (1.6mm) less than full channel width or be positively located in the glazing channel to provide proper support for the entire glass thickness at all times. The height of the setting blocks should provide the recommended nominal bite and minimum edge clearance for the glass.

When a lockstrip gasket glazing system is used, each setting block should be sized to provide 0.4" of length per square foot (109mm per square meter) of glass area, but not less than 4" (102mm) of length. The height of the setting block should be recommended by the lockstrip gasket manufacturer.

Edge, Face & Bite Clearances

The glazing system must provide adequate edge and face clearance to properly cushion the glass, to thermally and mechanically isolate the glass from the glass-framing members, and prevent glass-to-metal contact.

CHART E

Deflection of Glass Framing Members

QFC Tower, Doha, Qatar
Glass: VERSALUX® BLUE 2000T
Aluminum Contractor: ALU NASA Aluminium

GLASS TYPE	GLASS THICKNESS		"A" MINIMUM EDGE CLEARANCE (INCH)	"B" NOMINAL BITE (INCH)	"C" MINIMUM FACE CLEARANCE (INCH)
	INCHES	MM			
Monolithic	3/32	2.5	1/8	1/4	1/16
	1/8	3.0	1/8	1/4	1/8
	5/32	4.0	3/16	5/16	1/8
	3/16	5.0	3/16	5/16	1/8
	1/4	6.0	1/4	3/8	1/8
	3/8	10.0	5/16	7/16	3/16
	1/2	12.0	3/8	7/16	1/4
Spandrel	1/4	6.0	1/4	3/8	3/16
Insulating	1/2	12.0	1/8	1/2	1/8
	5/8	15.0	1/8	1/2	1/8
	3/4	19.0	1/4	1/2	3/16
	1	25.0	1/4	1/2	3/16

CHART F
Clearance and Bite Recommendations

The glazing system must also provide a nominal bite on the glass that will provide adequate glass retention without excessive glass coverage. Excessive glass coverage can increase thermal stresses at the glass edge. Clearances and bite recommended for Zeledyne's architectural glass products are shown in ***Chart F***. (Note: Unshimmed glazing tapes should not be used.)

Glass Spacers

Face clearance for the glass should be provided by a continuous gasket or spacer of neoprene or an equivalent material. The use of intermittent shims should be discouraged. The Shore A durometer hardness of the continuous spacer will be determined by the practical requirements of the glazing system. In a wet-seal system, a low durometer material may be used to position the glass in the glazing channel and provide a backup for the sealant. In a tape glazing system, a high durometer material may be used to apply adequate pressure to a preshimmed glazing tape.

Edge Blocks

Glass should be centered both vertically and horizontally in the opening. The glass must be free to "float" in the opening to prevent movement in the glass-framing members from being transmitted directly to the glass and creating mechanical stresses. For large lites or insulating glass units, edge blocks should be used to prevent lateral "walking" of the glass. This "walking" occurs due to relative movement between the glass and the frame caused by the different thermal expansion and contraction characteristics of the materials. The edge blocks should be a minimum of 3" (76mm) in length. The blocks should be placed in the vertical channel width. They should be made of 55±5 Shore A durometer hardness neoprene and should be sized to provide a nominal 1/8" (3mm) clearance between the block and the edge of the glass.

Weep Systems

The glazing system must be designed to prevent the accumulation of moisture in the glazing channel for prolonged periods. The weep system should incorporate enough weep holes to ensure adequate drainage. When the weep system consists of weep holes at the sill in a location that can be wetted by driven rain, the holes should be equivalent to three 3/8" (9.5mm) diameter holes. One hole should be located at the center of the sill and one at each end between the jamb and setting block. When a lockstrip gasket system is used,

an adequate weep system and auxiliary sealant around the entire periphery, or a combination of both, must be used.

Glass Handling, Cleaning & Maintenance

Care must be exercised in the handling and glazing of glass to prevent damage to the glass edge. The glass must not contact the glass framing member or the surrounding structure during the glazing operation. Glass edge damage can also occur when the glass is rotated or "pitched" on its corner on hard surfaces. For insulating glass units, it is recommended that a "rolling block" be used on the corner of the glass by the glazier when rotating the unit. The "rolling block" minimizes the possibility of damaging the corner of the glass by distributing the weight of the unit along the edges rather than concentrating the weight at the corner.

Versalux® glass products may be cleaned periodically using a soft, clean, grit-free cloth. To remove built-up grime and smudges, most commercial glass cleaning solutions work well. Both Versalux glass and coatings are very durable when proper cleaning techniques are employed. Glass surfaces must be protected from scratches and should not be cleaned by mechanical buffers or any metallic scraper. Detailed cleaning instructions for Versalux products are available from Zeledyne upon request.

Watershed

When a sealant filler is used over a gasket or glazing tape to provide a watershed, the sealant should not extend more than 1/16" (1.6mm) above the metal sight line. This sealant filler increases the effective bite on the glass, which can increase thermal stress. Building overhangs, surrounding structures, trees and shrubbery can create a variety of exterior shading patterns on glass in a building. This exterior shading can create varying degrees of thermal edge stress in the glass.The maximum thermal stress occurs when 25% or less of an individual glass lite is shaded and when the shaded area includes more than 25% of the lite's perimeter. Generally, horizontal, vertical, and diagonal shading patterns are not as critical as shading that includes combinations of these shading patterns. Double diagonal shading that creates a pattern that is "V" shaped in nature with the center of the "V" located at the center of a glass edge is generally the most critical shading pattern.

Chart G shows some typical shading patterns that can be created in a building. These are labeled "Acceptable," "Marginal," and "Harmful." These drawings and designations can serve as a guide to the severity of thermal stress created by various exterior shading patterns. However, if an unusual shading pattern

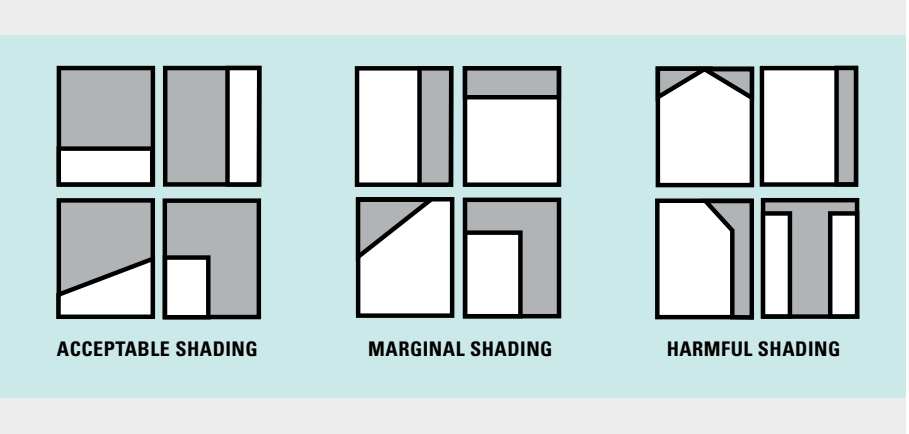


CHART G

Typical Shading Patterns

Issa Tower
Glass: VERSALUX® BLUE 2000T
Consultant: Emaret Al Sharq
Aluminum Contractor: Thomas Bennet
Distributor: Intraco UAE

Sound Control

- All Versalux tinted and tinted reflective products can be laminated to achieve greater sound attenuation properties.

- Refer to GANA (Glass Association of North America) Laminating Division's *Laminated Glass Design Guide*, latest edition, or contact architectural glass laminating fabricators for additional information.

is anticipated, it is recommended that a representative of Zeledyne be consulted in the design stages for technical review to determine if heat-strengthening or tempering is required.

Other Factors

Heat treating for 3/16" (5mm) or heavier Zeledyne reflective glass or heat-absorbing glass should be considered to avoid breakage under the following conditions: glazing applications that induce mechanical stresses on the glass; designs requiring notches to be cut or holes to be drilled in the glass; painted signs or large labels used on the glass.

Glazing Guidelines

The following glazing guidelines are intended to assist the design professional in developing glass support systems that will minimize the possibility of glass breakage due to thermal and mechanical stresses. In addition, specifiers and users can refer to the most current glazing recommendations published by GANA, AAMA, and IGMA.

As new and unique glazing systems are developed, variations from these guidelines may be justified. In such cases, precise details of the glazing system must be submitted to a Zeledyne representative for review.

The design of a properly functioning glazing system requires consideration of the following: the glass retaining system; the method of erection; the glass type and size; the various component and erection tolerances involved.

The glazing system must adequately support and cushion the glass to minimize loads on the glass due to building movements and movement occurring due to expansion and contraction of the glass-holding members.

Silicon Oasis Headquarters, Dubai, UAE
Glass: 6mm VERSALUX® BLUE 2000R
Alum. Contractor: ALICO

Popular Opacifying Options for 2nd, 3rd, or 4th Glass Surfaces of Spandrels

MONOLITHIC			
GLASS SURFACE (When Viewed From Exterior)	**Versalux Tinted**	**Versalux R**	**Versalux T**
SECOND (2)			
Uncoated Surface	CF or SC	CF, SC or PF	CF, SC or PF
Reflective Coated Surface	N/A	CF, SC or PF	SC

INSULATED GLASS (Interior Lite Clear)			
GLASS SURFACE (When Viewed From Exterior)	**EXTERIOR LITE**		
	Versalux Tinted	**Versalux R**	**Versalux T**
SECOND (2)			
Uncoated Surface	CF or SC*	CF or SC*	CF or SC*
Reflective Coated Surface	N/A	CF or SC*	SC*
THIRD (3) Clear Glass	CF or SC*	CF or SC*	CF or SC*
FOURTH (4) Clear Glass	CF or SC	CF, SC or PF	CF, SC or PF

CF = Ceramic Frit **SC = Water-Based Silicone Coating** **PF = Polyester Film**

* *Edge deletion of silicone coating required, contact manufacturer for additional information.*

Footnotes Apply to Tinted and Reflective Versalux® Monolithic, Insulated with Clear and Insulated with Low-E

∇ **Federal Technology alert DOE/EE-0173 Spectrally Selective glazings dated August 1998 states**: Light to Solar Gain Ratio (LSG) is Visible Light Transmittance ÷ Solar Heat Gain Coefficient. (*Spectrally Selective Glazing has a high Tv and low SHGC. The ratio of these parameters, or the light to solar gain ratio LSG=Tv/SHGC), is typically between 1.25 - 2.0". This FTA defines spectrally selective glazings as those that sharply cut off or reduce solar transmission beyond the visible range with a total solar transmission of no less than 0.40 in the visible range.)*

@ Air Space Filling: Light Bands Air Filled – Dark Bands Argon Filled.

It is recommended these products be heat treated (heat strengthened or fully tempered) to withstand solar induced thermal stresses.

** These products may require heat treating to withstand solar induced thermal stresses when the reflective coating is glazed towards the building's interior. (See pages 11-15).

a The Winter Nighttime U/R Values (K Values) are based on an outdoor temperature of 0°F (-17.8°C), an indoor temperature of 70°F (21°C), 15 mph (24km/h) outdoor air speed and no sun. The Summer Daytime U/R Values (K Value) are based on an outdoor temperature of 89°F (32°C), an indoor temperature of 75°F (24°C), a 7.5 mph (12km/h) outdoor air speed and a solar intensity of 248 BTU/Hr. per Ft^2 (790 w/m^2.)

b Shading Coefficient is the ratio of solar heat gain through a glass or glass and shading combination compared to that of unshaded 1/8" (3.0mm) clear float glass at normal incidence. The shading coefficient of 1/8" (3.0mm) clear float glass is 1.00.

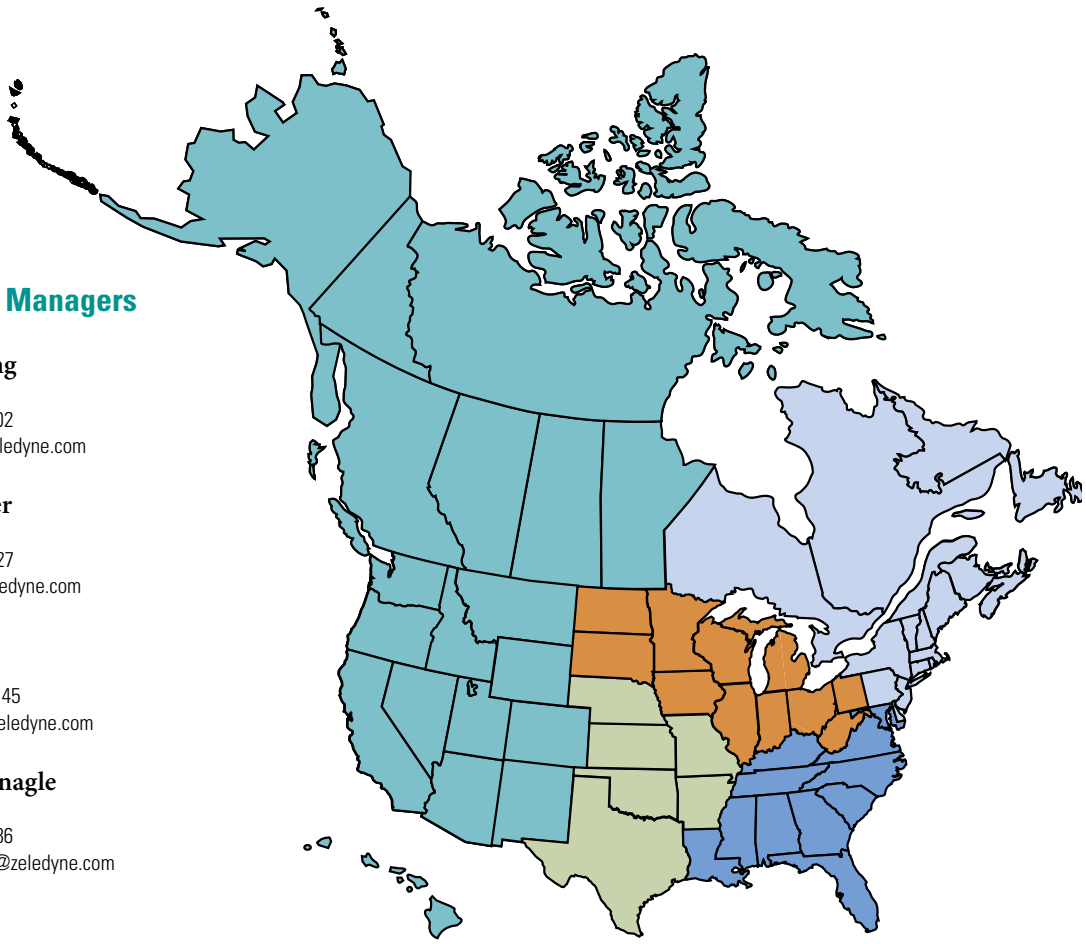
c Solar Heat Gain Coefficient is the solar heat gain through glass relative to the incident solar radiation. SHGC is equal to approximately 86% of the shading coefficient.

d Relative Heat Gain is the combination of solar heat gain (transmitted and that amount of absorbed energy that is conducted or convected to the interior) and heat transfer due to the indoor/outdoor temperature differential. (Based on an ASHRAE solar heat gain factor of 200 BTU/Hr. per Ft^2. (637 w/m^2) and outdoor air 14°F (7.8°C) warmer than indoor air with no shading devices.)

e From LBNL WINDOW 5.2 V5.2.17 COMPUTER ANALYSIS (300-380 nanometers.) Environmental conditions assumed: NFRC 100-2001 Summer and NFRC 100-2001 winter.

Performance data represents center of glass values calculated under the guidelines of LBNL WINDOW 5.2 V5.2.17 COMPUTER ANALYSIS, assuming an air mass of 1.5.

CONTACT INFORMATION



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