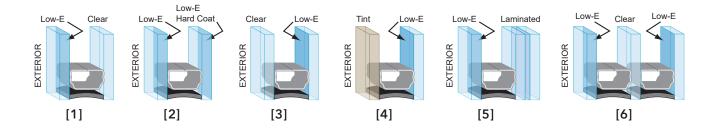## Center of Glass Performance

Glazing Diagram	Type of Glazing	Glass Thickness	U-Factor	Solar Heat Gain Coefficient (SHGC)	Shading Coefficient (SC)	Relative Heat Gain	% Visible Light Transmission	Visible Light Reflectance		% Solar Transmission	Total Solar Reflectance		Inside Glass Surface Temp (°F)	% Relative Humidity @70°F when condensation appears on room side	% UV Transmission	LBL Damage Function	Low-E Coating on Surfaces #
								% Out	% In		% Out	% In					
Dual-Pane Insulating Glass, Argon filled 11/16" overall thickness																	
	Clear (air filled)	3mm 1	0.48	0.78	0.89	186	82	15	15	73	13	13	44	39	58	0.61	
1	SunDefense™ Low-E	3mm 1	0.24	0.27	0.31	66	65	11	12	25	44	47	56	61	5	0.21	2
1	Advanced Low-E	3mm 1	0.25	0.37	0.42	88	70	12	13	34	39	41	56	61	14	0.31	2
2	AdvancedComfort Low-E	3mm 1	0.20	0.36	0.42	86	69	12	12	33	39	31	47	44	14	0.31	2, 4
3	NaturalSun Low-E	3mm 1	0.26	0.68	0.79	161	79	15	15	60	21	21	55	59	29	0.42	3 or 2*
4	Bronze Advanced Low-E	5mm/3mm	0.25	0.32	0.37	78	45	7	11	22	18	38	56	61	7	0.19	3
4	Gray Advanced Low-E	5mm/3mm	0.25	0.30	0.34	73	39	6	10	19	16	38	56	61	7	0.18	3
4	Green Advanced Low-E	5mm/3mm	0.25	0.37	0.42	88	61	10	11	26	13	38	56	61	5	0.19	3
5	Advanced Laminated Low-E	3mm/6mm	0.28	0.37	0.42	88	69	13	13	32	39	32	53	55	0	0.2	2 or 3**
5	SunDefense™ Laminated Low-E	3mm/6mm	0.27	0.28	0.32	67	63	11	13	24	45	37	53	55	0	0.16	2 or 3**
Dual-Pane Insulating Glass, Argon filled 1" overall thickness																	
	Clear (air filled)	6mm	0.47	0.72	0.83	172	80	15	15	63	12	12	46	41	54	0.58	
1	SunDefense Low-E	6mm	0.25	0.27	0.31	65	63	10	11	24	36	38	56	61	4	0.2	2
1	Advanced Low-E	6mm	0.25	0.35	0.41	84	68	12	12	31	32	34	56	61	13	0.3	2
2	AdvancedComfort Low-E	6mm	0.20	0.35	0.40	82	66	12	12	30	32	26	47	44	12	0.29	2,4
3	NaturalSun Low-E	6mm	0.26	0.64	0.74	150	77	14	15	52	18	18	55	59	24	0.38	3 or 2*
4	Bronze Advanced Low-E	6mm	0.25	0.30	0.34	71	40	7	10	19	16	31	56	61	6	0.16	3
4	Gray Advanced Low-E	6mm	0.25	0.27	0.31	64	34	6	10	17	14	31	56	61	6	0.16	3
4	Green Advanced Low-E	6mm	0.25	0.35	0.40	83	59	10	11	24	11	32	56	61	4	0.17	3
5	Advanced Laminated Low-E	5mm/10mm	0.25	0.36	0.41	85	67	12	12	N/A	N/A	N/A	56	61	0	0.17	2 or 3**
5	SunDefense™ Laminated Low-E	5mm/10mm	0.24	0.27	0.31	66	62	11	12	N/A	N/A	N/A	56	61	0	0.14	2 or 3**
1" Triple-Pane Insulating Glass – Pella® 250 Series																	
6	Advanced Low-E	3mm	0.16	0.31	0.36	74	55	15	15	22	41	41	60	71	4	0.19	2, 5
6	NaturalSun Low-E	3mm	0.17	0.56	0.64	131	70	20	20	47	25	25	60	71	13	0.29	2
6	Advanced Low-E	4mm	0.19	0.31	0.35	73	53	15	15	21	38	38	59	68	4	0.19	2, 5
6	NaturalSun Low-E	4mm	0.20	0.54	0.62	127	69	20	20	43	23	23	59	68	12	0.28	2

Total Solar Reflectance is accounting for the reflectance of the light wavelengths across the total solar spectrum and includes the wavelengths for UV, Visible, and IR.
Visible Light Reflectance only accounts for the reflectance of light wavelengths in the visible light spectrum, i.e. 380 – 780 nanometers.

[1] [2] [3] [4] [5] [6]

(1) Performance of products with 3/4", 13/16" IG or 2.5mm glass is within 10% of those stated for 3mm glass.

(2) 4mm and 5mm glass construction perform similar to 3mm within 10%.

* Wood products and Pella Impervia: Side 3, Pella 250 Series and Encompass by Pella: Side 2

** Varies by product.

Pella® Lifestyle Series Casement

Aluminum EnduraClad® Exterior

Detailed Product Descriptions

Frame

- Select softwood, immersion treated with Pella's EnduraGuard® wood protection formula in accordance with WDMA I.S.-4. The EnduraGuard formula includes three active ingredients for protection against the effects of moisture, decay, stains from mold and mildew. Plus, an additional ingredient adds protection against termite damage.
- Interior exposed surfaces are clear pine.
- Exterior surfaces are clad with aluminum.
- Components are assembled with screws, staples and concealed corner locks.
- Overall frame depth is 5" (127 mm) for a wall depth of 3-11/16" (94 mm).
- Optional factory-applied jamb extensions available between 3-13/16" (97) and 9-3/16" (233).
- Optional factory-installed fold-out installation fins with flexible fin corners.
- Optional factory-applied EnduraClad® exterior trim.

Sash

- Select softwood, immersion treated with Pella's EnduraGuard® wood protection formula in accordance with WDMA I.S.-4. The EnduraGuard formula includes three active ingredients for protection against the effects of moisture, decay, stains from mold and mildew. Plus, an additional ingredient adds protection against termite damage.
- Interior exposed surfaces are clear pine.
- Exterior surfaces are clad with aluminum, lap-jointed and sealed.
- Corners mortised and tenoned, glued and secured with metal fasteners.
- Sash thickness is [1-3/4" (45 mm) dual-pane] [2-3/16" (55mm) triple-pane, (2-1/4" (57 mm) including hinged glass panel)].

Weatherstripping

- Dual weatherstripping.
  - Flexible santoprene material compressed between frame and sash for positive seal on all four sides.
  - Secondary thermoplastic vulcanizate (TPV) weatherstrip between edge of sash and frame [Dual-Pane: leaf-type on the vertical sides and bottom side, and Santoprene® bulb-type weatherstrip on the top side] [Triple-Pane: leaf-type on all four sides].

Glazing System

- Quality float glass complying with ASTM C 1036.
- High altitude glazing available.
- Silicone-glazed 11/16" [obscure] dual-seal insulating glass [[annealed] [tempered]] [[Advanced Low-E] [SunDefense™ Low-E] [AdvancedComfort Low-E] [NaturalSun Low-E] with argon].

-or-

- Triple-Pane Glazing System:
  - Exterior silicone-glazed 11/16" [obscure] dual-seal insulating glass, [[annealed] [tempered]] [[Advanced Low-E] [SunDefense™ Low-E] [AdvancedComfort Low-E] [NaturalSun Low-E] with argon].
  - Interior hinged glass panel set in a [veneered fiberglass composite] [aluminum (advanced comfort)] frame finished to match interior (aluminum frames are veneered for stain finishes), fitted to sash with continuous gasket seal, clear [annealed] [tempered] glass.
  - Airspace between insulating glass and hinge glass panel is 1-1/32".

Exterior

- Exterior aluminum surfaces are finished with EnduraClad® protective finish, in a multi-step, baked-on finish.
- Finish color:
  - Dual-pane [White] [Tan] [Putty] [Brown] [Poplar White] [Portobello] [Hartford Green] [Morning Sky Gray] [Brick Red] [Black].
  - Triple-pane [White] [Tan] [Putty] [Brown] [Poplar White] [Portobello] [Hartford Green] [Morning Sky Gray] [Brick Red] [Black] [Almond] [Fossil] [Iron Ore].

Interior

- [Unfinished, ready for site finishing] [factory primed with one coat acrylic latex] [factory prefinished [White] [Linen White] [Bright White] [stain$_1$]].

Hardware

- Roto operator assembly
  - Steel worm gear sash operator with hardened gears.
  - Operator base to be zinc die cast with painted finish.
  - Operator linkage, hinge slide, and hinge arms are stainless steel.
  - Exposed fasteners are stainless steel.
  - Hardware will exceed 1,000 hours salt spray exposure per ASTM B 117.
- Innovative Locking System — A single handle locking system which operates positive-acting arms that reach out and pull the sash into a locked position: one operating lock installed on units with lock-side frame dimension [Dual-pane ≤ 29"] [Triple-pane ≤ 41"] , two unison operating locks are installed on units with lock-side frame dimension [Dual pane > 29"] [Triple-pane > 41"].

- Standard Integrated fold-away crank and lock handle finish is [baked enamel [Champagne] [White] [Brown] [Matte Black]] [Oil-Rubbed Bronze] [Satin Nickel].

Optional Products

Grilles

- Roomside Removable Grilles (Dual-Pane glazing only)
  - 3/4" [Traditional] [Custom – Equally divided] removable solid pine wood bars steel-pinned at joints and fitted to sash with steel clips and tacks.
  - Interior [unfinished, ready for site finishing] [factory primed] [pine: factory prefinished [White] [Linen White] [Bright White] [stain$_1$]].
  - Exterior [unfinished, ready for site finishing] [factory primed] [factory prefinished, finish color matched to exterior cladding$_4$].

  – or –

- Simulated-Divided-Light [with optional spacer] (Dual-pane glazing)
  - 7/8" Grilles permanently bonded to the interior and exterior of glass.
  - Patterns are [Traditional] [Prairie] [Cross] [Top Row] [Custom – Equally Divided].
  - Interior surfaces are [unfinished, ready for site finishing] [factory primed] [pine: factory prefinished [White] [Linen White] [Bright White] [stain$_1$]].
  - Exterior color to match the exterior cladding color.
- Simulated-Divided-Light with Grilles-Between-the-Glass (Triple-pane glazing)
  - 3/4" Grilles permanently bonded to the exterior of glass.
  - Patterns are [Traditional] [Prairie] [Cross] [Top Row] [Custom – Equally Divided].
  - Exterior color to match the exterior cladding color.
  - Insulating glass contains 3/4" contoured aluminum grilles permanently installed between two panes of glass.
  - Interior color is [White] [Ivory] [Tan$_3$] [Brickstone] [Black] [Putty$_3$] [Brown$_3$] [Harvest] [Cordovan].

  – or –

- Grilles-Between-the-Glass$_2$
  - Insulating glass contains 3/4" contoured aluminum grilles permanently installed between two panes of glass.
  - Patterns are [Traditional] [9-Lite Prairie] [Top Row] [Cross] [Custom – Equally Divided].
  - Interior color is [White] [Ivory] [Tan$_3$] [Brickstone] [Black] [Putty$_3$] [Brown$_3$] [Harvest] [Cordovan].
  - Exterior color [matched to the exterior cladding color] [White]$_4$.

Flat Insect Screen

- InView™ Screens
  - Vinyl-coated 18/18 mesh fiberglass screen cloth complying with the performance requirements of SMA 1201, set in aluminum frame fitted to inside of window, supplied complete with all necessary hardware.
  - Screen frame finish is baked enamel, [Champagne] [White] [Brown] [Black].

  – or –

- Vivid View®
  - PVDF 21/17 mesh, minimum 78 percent light transmissive screen, set in aluminum frame fitted to inside of window, supplied complete with all necessary hardware.
  - Screen frame finish is baked enamel, [Champagne] [White] [Brown] [Black].

  – or –

- Rolscreen® Soft-close Retractable Screen
  - InView™ Screen cloth, self-storing, rolling, black vinyl-coated 18/18 mesh fiberglass screen cloth complying with ASTM D 3656 and the performance requirements of SMA 1201 mounted behind overhead cover.
  - Cover finish is [factory prefinished paint$_1$] [pine veneer wrapped over extruded aluminum with factory prefinished stain$_1$].
  - Guides are aluminum extrusion with [pine veneer wrapped over extruded aluminum with factory prefinished stain$_1$] [factory prefinished paint$_1$].

Integrated Between-the-Glass Window Fashions (Triple-Pane glazing only)$_1$

- Slimshade® Blinds
  - 15 mm aluminum slat, bottom-up blinds with polyester cord ladder
  - Installed in sash between double glazing and interior hinged glass panel.
  - Operated with cordless operator or motorized with Insynctive® technology.

  – or –

- Cellular Fabric Shades
  - 11/16" width, bottom-up shades with hidden polyester cord, spun bond Polyethylene Terephthalate (PET) cellular fabric.
  - Installed in sash between double glazing and interior hinged glass panel.
  - Operated with cordless operator or motorized with Insynctive® technology.

Hardware

  - Optional factory applied limited opening hardware available for vent units in stainless steel; nominal 3" opening.
  - Optional window opening control device available for field installation. Device allows window to open less than 4" with normal operation, with a release mechanism that allows the sash to open completely. Complies with ASTM F2090-17.

Sensors

  - Optional factory installed integrated security sensors available in vent units.

(1) Contact your local Pella sales representative for current designs and color options.

(2) Available on units glazed with Low-E insulated glass with argon, and obscure insulated glass.

(3) Tan, brown and putty Interior GBG colors are available only with matching interior and exterior colors.

(4) Appearance of exterior grille color will vary depending on Low-E coating on glass.