



ENERGY EFFICIENCY EXPLAINED



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REDUCING EMISSIONS, REDUCING CLIMATE CHANGE.

To help combat climate change, the Australian Government is implementing national policies to reduce emissions. These new measures will impact the way we build homes and the materials we choose. It's vital that everyone in the building and construction industry – especially architects, designers and builders – understand how to comply with these changes.

THE ROLE OF WINDOWS AND DOORS IN ENERGY EFFICIENCY.

Windows and doors don't use energy themselves so they're considered passive products, but by allowing the transfer of energy they severely impact a building's heating and cooling load. In fact, regardless of how well a building is insulated, windows are the most vulnerable to energy loss. This means it's vital to give careful thought to windows and doors during the design and building stages of any project.

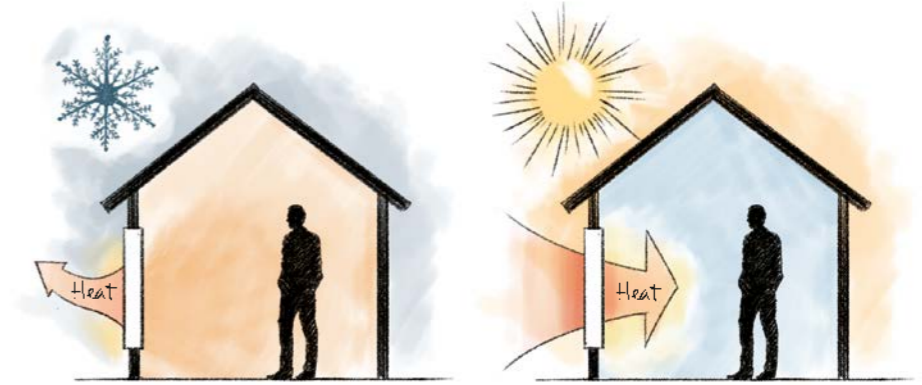
How is a window's energy efficiency measured?

One of the most important ways to reduce a home's energy consumption is to use the right windows to limit heat gain or loss. There are four main measures for a window's energy performance, all of which take into account the whole window system (frame, glass seals, spacers, etc.).

1. U Value

Purpose: Provides insulation level.

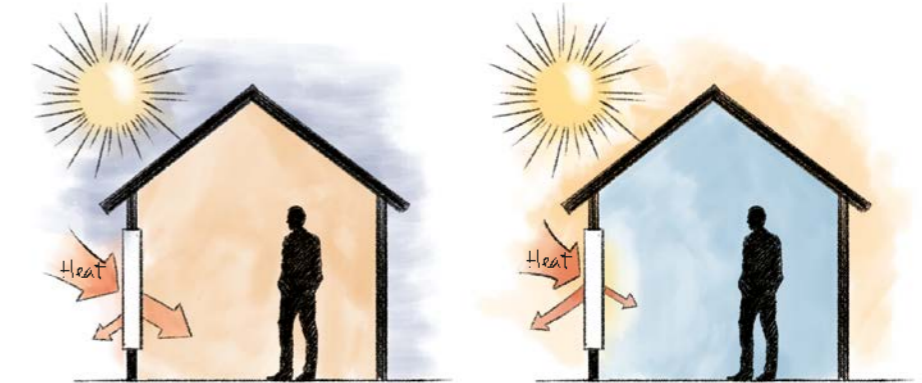
Application: The lower the U Value, the better it is at insulating energy flow through the window system.



2. SHGC – Solar Heat Gain Coefficient

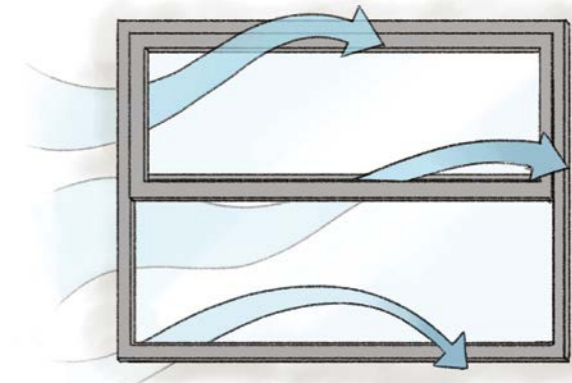
Purpose: Controls the passive heat from the sun.

Application: A higher SHGC is desirable in cold climates, where a lower SHGC is better for hot regions.



3. AI – Air Infiltration

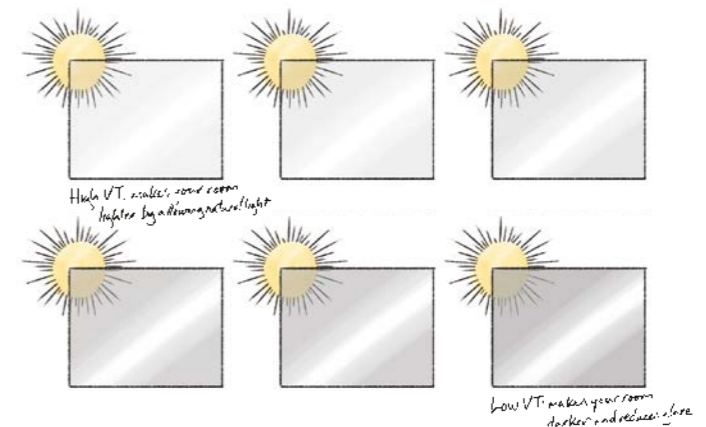
Purpose: AS2047 measures window system's leakiness.



4. VT – Visible Transmittance

Purpose: Provides daylight level.

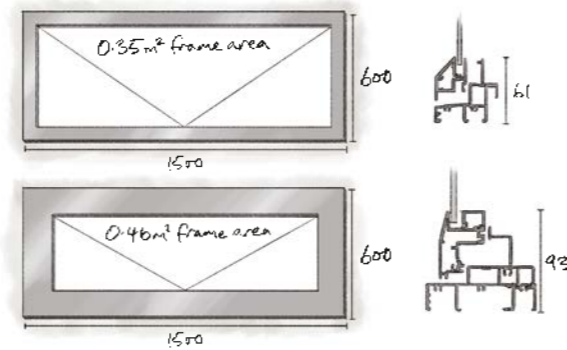
Application: Rooms with smaller windows need a higher VT to allow more light, while rooms with bigger windows need a lower VT to reduce glare.



WHAT AFFECTS A WINDOW'S ENERGY EFFICIENCY?

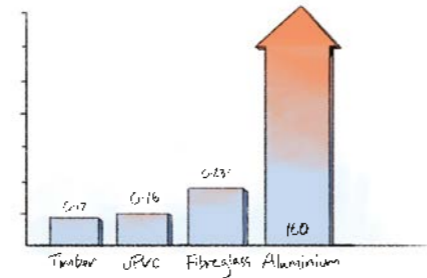
A window's U Value and SHGC are affected by the following design factors:

■ Frame Size (height and depth)



■ Frame Material Conductivity

This is a material's ability to conduct energy. The lowest rated is timber and the highest is aluminium, which is 1000 times more conductive than timber.



A window's U Value, SHGC and AI are affected by the following design factors:

■ Seals

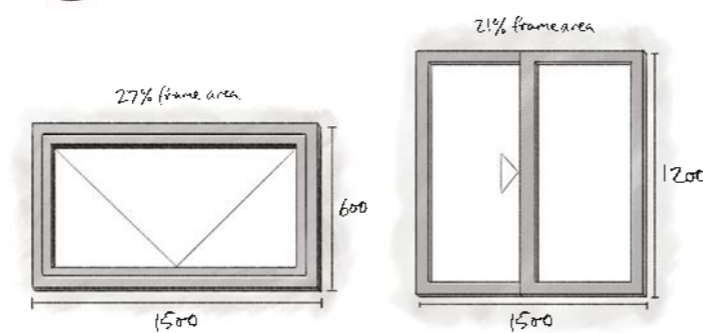
Affect Air Infiltration ONLY, DOES NOT affect U value or SHGC



■ Window type

Even when the same framing materials are used, the U value and SHGC will vary depending on the size of the windows.

** NFRC testing sizes are applied to ALL window sizes, despite actual performance changing as sizes and shapes vary.



CHOOSING THE RIGHT WINDOWS.

The NCC requires windows to be rated according to the Australian Fenestration Rating Council's protocols and procedures. The standardised ratings mean the performance of different glazed systems can be compared like-for-like.

It's critical to assess glazing options, including their size, orientation, early in the design process to make sure you

choose the right window and glazing system.

Increasingly, windows are being selected that may not help achieve the desired energy outcomes. The following tables will help you select the Trend products that will allow you to achieve your required rating.

WINDOW ENERGY PERFORMANCE SYNERGY

Synergy Aluminium Residential Series

Clear Glass - Single Glazed

| Window & Door Type | Trend code | U-Value | SHGC | Default code | U-Value | SHGC |
|-------------------------|------------|---------|------|--------------|---------|------|
| Awning window | TND-002-01 | 6.6 | 0.66 | ALM-002-01-A | 6.7 | 0.70 |
| Fixed window | TND-024-01 | 6.1 | 0.74 | ALM-002-01-A | 6.7 | 0.70 |
| Sliding window | TND-001-01 | 6.5 | 0.73 | ALM-002-01-A | 6.7 | 0.70 |
| Double Hung window | TND-020-01 | 6.3 | 0.75 | ALM-002-01-A | 6.7 | 0.70 |
| Sliding & Stacking door | TND-017-01 | 6.5 | 0.73 | ALM-002-01-A | 6.7 | 0.70 |

Clear Glass - Double Glazed

| | | | | | | |
|-------------------------|------------|-----|------|--------------|-----|------|
| Awning window | TND-002-15 | 4.1 | 0.57 | ALM-006-03 A | 4.1 | 0.52 |
| Fixed window | TND-031-02 | 3.3 | 0.66 | ATB-006-01 B | 3.5 | 0.64 |
| Sliding window | TND-001-15 | 4.2 | 0.58 | ALM-004-03-A | 4.3 | 0.53 |
| Double Hung window | TND-029-01 | 4.1 | 0.58 | ALM-004-03-A | 4.3 | 0.53 |
| Sliding & Stacking door | TND-017-09 | 3.8 | 0.62 | CMP-006-01 I | 3.9 | 0.63 |

Grey Glass - Single Glazed

| | | | | | | |
|-------------------------|------------|-----|------|--------------|-----|------|
| Awning window | TND-002-05 | 6.4 | 0.48 | ALM-002-02-A | 6.6 | 0.49 |
| Fixed window | TND-024-02 | 6.1 | 0.55 | ALM-001-01-A | 6.7 | 0.57 |
| Sliding window | TND-001-04 | 6.4 | 0.53 | ALM-001-01-A | 6.7 | 0.57 |
| Double Hung window | TND-020-03 | 6.1 | 0.43 | CMP-001-02 I | 6.2 | 0.41 |
| Sliding & Stacking door | TND-017-02 | 6.4 | 0.54 | ALM-001-01-A | 6.7 | 0.57 |

Grey Glass - Double Glazed

| | | | | | | |
|-------------------------|------------|-----|------|--------------|-----|------|
| Awning window | TND-002-13 | 4.2 | 0.42 | TIM-001-03 W | 4.3 | 0.42 |
| Fixed window | TND-002-13 | 4.2 | 0.42 | TIM-001-03 W | 4.3 | 0.42 |
| Sliding window | TND-001-16 | 4.2 | 0.46 | TIM-002-03 W | 4.3 | 0.50 |
| Double Hung window | TND-029-02 | 4.1 | 0.43 | TIM-001-03 W | 4.3 | 0.42 |
| Sliding & Stacking door | TND-017-10 | 3.8 | 0.46 | CMP-005-01 I | 3.9 | 0.50 |

Clear Low E Glass (Planibel G) - Single Glazed

| | | | | | | |
|-------------------------|------------|-----|------|--------------|-----|------|
| Awning window | TND-002-26 | 4.7 | 0.61 | ALM-004-01-A | 4.8 | 0.59 |
| Fixed window | TND-024-06 | 4.4 | 0.65 | ALM-006-01-A | 4.5 | 0.61 |
| Sliding window | TND-001-28 | 4.7 | 0.61 | ALM-004-01-A | 4.8 | 0.59 |
| Double Hung window | TND-020-08 | 4.7 | 0.62 | ALM-004-01-A | 4.8 | 0.59 |
| Sliding & Stacking door | TND-017-20 | 4.4 | 0.59 | ALM-006-01-A | 4.5 | 0.61 |

Clear Low E Glass (Planibel G) - Double Glazed

| | | | | | | |
|-------------------------|------------|-----|------|--------------|-----|------|
| Awning window | TND-002-17 | 3.5 | 0.53 | ATB-004-01 B | 3.6 | 0.54 |
| Fixed window | TND-031-04 | 2.6 | 0.60 | TIM-004-01 W | 3.0 | 0.56 |
| Sliding window | TND-001-17 | 3.5 | 0.55 | ATB-004-01 B | 3.6 | 0.54 |
| Double Hung window | TND-029-03 | 3.6 | 0.54 | ALM-004-03-A | 4.3 | 0.53 |
| Sliding & Stacking door | TND-017-11 | 3.0 | 0.59 | TIM-004-01 W | 3.0 | 0.56 |

Neutral Low E Glass (Sunergy) - Single Glazed

| | | | | | | |
|-------------------------|------------|-----|------|--------------|-----|------|
| Awning window | TND-002-07 | 5.0 | 0.51 | ALM-001-03-A | 5.4 | 0.49 |
| Fixed window | TND-024-07 | 4.7 | 0.55 | ALM-004-01-A | 4.8 | 0.59 |
| Sliding window | TND-001-29 | 5.0 | 0.51 | ALM-001-03-A | 5.4 | 0.49 |
| Double Hung window | TND-020-09 | 5.0 | 0.53 | ALM-001-03-A | 5.4 | 0.49 |
| Sliding & Stacking door | TND-017-21 | 4.7 | 0.51 | ALM-003-01-A | 4.8 | 0.51 |

WINDOW ENERGY PERFORMANCE QUANTUM

Quantum Aluminium Architectural Series

| Clear Glass - Single Glazed | | | | | | |
|--|------------|---------|------|--------------|---------|------|
| Window & Door Type | Trend code | U-Value | SHGC | Default code | U-Value | SHGC |
| Awning & Casement window | TND-061-01 | 6.6 | 0.56 | ALM-001-01-A | 6.7 | 0.57 |
| Fixed window | TND-024-01 | 6.1 | 0.74 | ALM-002-01-A | 6.7 | 0.70 |
| Sliding window | TND-078-01 | 6.7 | 0.67 | ALM-002-01-A | 6.7 | 0.70 |
| Bi-Fold window & door | TND-022-01 | 6.0 | 0.59 | ALM-001-01-A | 6.7 | 0.57 |
| Sliding & Stacking door | TND-017-01 | 6.5 | 0.73 | ALM-002-01-A | 6.7 | 0.70 |
| Hinge door | TND-021-01 | 6.0 | 0.61 | ALM-001-01-A | 6.7 | 0.57 |
| Clear Glass - Double Glazed | | | | | | |
| Awning & Casement window | TND-062-02 | 4.5 | 0.49 | ALM-005-01-A | 4.5 | 0.50 |
| Fixed window | TND-031-02 | 3.3 | 0.66 | ATB-006-01 B | 3.5 | 0.64 |
| Sliding window | TND-079-02 | 4.2 | 0.60 | ALM-006-01-A | 4.5 | 0.61 |
| Bi-Fold window & door | TND-026-01 | 4.0 | 0.52 | ALM-006-03 A | 4.1 | 0.52 |
| Sliding & Stacking door | TND-017-09 | 3.8 | 0.62 | CMP-006-01 I | 3.9 | 0.63 |
| Hinge door | TND-030-01 | 4.2 | 0.51 | TIM-002-03 W | 4.3 | 0.50 |
| Grey Glass - Single Glazed | | | | | | |
| Awning & Casement window | TND-061-03 | 6.6 | 0.44 | ALM-001-02-A | 6.6 | 0.41 |
| Fixed window | TND-024-02 | 6.1 | 0.55 | ALM-001-01-A | 6.7 | 0.57 |
| Sliding window | TND-078-03 | 6.7 | 0.53 | ALM-001-01-A | 6.7 | 0.57 |
| Bi-Fold window & door | TND-022-04 | 6.0 | 0.42 | ALM-001-02-A | 6.6 | 0.41 |
| Sliding & Stacking door | TND-017-02 | 6.4 | 0.54 | ALM-001-02-A | 6.6 | 0.49 |
| Hinge & Bi-Fold door | TND-021-03 | 6.0 | 0.45 | CMP-002-02 I | 6.2 | 0.45 |
| Grey Glass - Double Glazed | | | | | | |
| Awning & Casement window | TND-062-04 | 4.5 | 0.37 | CMP-001-04 I | 4.6 | 0.36 |
| Fixed window | TND-002-13 | 4.2 | 0.42 | TIM-001-03 W | 4.3 | 0.42 |
| Sliding window | TND-079-04 | 4.2 | 0.44 | TIM-001-03 W | 4.3 | 0.42 |
| Bi-Fold window & door | TND-026-02 | 4.0 | 0.38 | TIM-001-03 W | 4.3 | 0.42 |
| Sliding & Stacking door | TND-017-10 | 3.8 | 0.46 | CMP-003-01 I | 3.9 | 0.51 |
| Hinge door | TND-030-02 | 4.2 | 0.38 | TIM-001-03 W | 4.3 | 0.42 |
| Clear Low E Glass (Planibel G) - Single Glazed | | | | | | |
| Awning & Casement window | TND-061-32 | 5.4 | 0.48 | TIM-002-02 W | 5.4 | 0.49 |
| Fixed window | TND-024-06 | 4.4 | 0.65 | ALM-006-01-A | 4.5 | 0.61 |
| Sliding window | TND-078-31 | 5.2 | 0.56 | TIM-001-01 W | 5.4 | 0.56 |
| Bi-Fold window & door | TND-022-05 | 4.5 | 0.49 | ALM-005-01-A | 4.5 | 0.50 |
| Sliding & Stacking door | TND-017-20 | 4.4 | 0.59 | ALM-006-01-A | 4.5 | 0.61 |
| Hinge door | TND-021-07 | 4.6 | 0.50 | CMP-002-041 | 4.6 | 0.46 |
| Clear Low E Glass (Planibel G) - Double Glazed | | | | | | |
| Awning & Casement window | TND-062-10 | 4.0 | 0.48 | ALM-005-03-A | 4.1 | 0.47 |
| Fixed window | TND-031-04 | 2.6 | 0.60 | TIM-004-01 W | 3.0 | 0.56 |
| Sliding window | TND-079-10 | 3.6 | 0.59 | CMP-002-03 I | 3.7 | 0.61 |
| Bi-Fold window & door | TND-026-03 | 3.4 | 0.49 | CMP-003-03 I | 3.4 | 0.47 |
| Sliding & Stacking door | TND-017-11 | 3.0 | 0.59 | TIM-004-01 W | 3.0 | 0.56 |
| Hinge door | TND-030-10 | 3.5 | 0.48 | ATB-005-01 B | 3.5 | 0.47 |
| Neutral Low E Glass (Sunergy) - Single Glazed | | | | | | |
| Awning & Casement window | TND-061-33 | 5.6 | 0.41 | ALM-002-04-A | 5.6 | 0.41 |
| Fixed window | TND-024-07 | 4.7 | 0.55 | ALM-003-01-A | 4.8 | 0.51 |
| Sliding window | TND-078-32 | 5.5 | 0.49 | CMP-002-021 | 6.2 | 0.45 |
| Bi-Fold window & door | TND-022-06 | 4.8 | 0.42 | TIM-001-02 W | 5.4 | 0.41 |
| Sliding & Stacking door | TND-017-21 | 4.7 | 0.51 | ALM-003-01-A | 4.8 | 0.51 |
| Hinge door | TND-021-08 | 4.8 | 0.43 | TIM-001-02 W | 5.4 | 0.41 |

WINDOW ENERGY PERFORMANCE BOTANICA

Botanica Timber Series

| Clear Glass - Single Glazed | | | | | | |
|--|------------|---------|------|--------------|---------|------|
| Window & Door Type | Trend code | U-Value | SHGC | Default code | U-Value | SHGC |
| Awning & Casement window | TND-007-01 | 4.6 | 0.58 | ALM-004-01-A | 4.8 | 0.59 |
| Double Hung window | TND-025-01 | 5.0 | 0.65 | TIM-002-01 W | 5.4 | 0.63 |
| Fixed window | TND-080-01 | 5.3 | 0.76 | ALM-002-01-A | 6.7 | 0.70 |
| Sliding window | TND-081-01 | 5.1 | 0.59 | ALM-002-03-A | 5.4 | 0.58 |
| Bi-Fold window & door | TND-041-01 | 4.5 | 0.54 | ALM-005-01-A | 4.5 | 0.50 |
| Sliding & Stacking door | TND-042-01 | 4.9 | 0.59 | ALM-002-03-A | 5.4 | 0.58 |
| Clear Glass - Double Glazed | | | | | | |
| Awning & Casement window | TND-007-11 | 2.5 | 0.50 | TIM-005-01 W | 2.6 | 0.50 |
| Double Hung window | TND-025-04 | 2.8 | 0.58 | TIM-004-01 W | 3.0 | 0.56 |
| Fixed window | TND-007-11 | 2.5 | 0.50 | TIM-005-01 W | 2.6 | 0.50 |
| Sliding window | TND-042-10 | 3.0 | 0.52 | TIM-003-01 W | 3.0 | 0.48 |
| Bi-Fold window & door | TND-041-11 | 2.7 | 0.47 | TIM-003-01 W | 3.0 | 0.48 |
| Sliding & Stacking door | TND-042-10 | 3.0 | 0.52 | TIM-004-01 W | 3.0 | 0.56 |
| Grey Glass - Single Glazed | | | | | | |
| Awning & Casement window | TND-007-05 | 4.6 | 0.41 | ALM-004-02-A | 5.2 | 0.39 |
| Double Hung window | TND-025-03 | 4.9 | 0.47 | TIM-002-02 W | 5.4 | 0.49 |
| Fixed window | TND-080-02 | 5.3 | 0.55 | ALM-002-03-A | 5.4 | 0.58 |
| Sliding window | TND-081-02 | 5.0 | 0.43 | ALM-004-02-A | 5.2 | 0.39 |
| Bi-Fold window & door | TND-041-03 | 4.5 | 0.39 | CMP-001-03 I | 4.6 | 0.36 |
| Sliding & Stacking door | TND-042-04 | 4.9 | 0.43 | TIM-001-02 W | 5.4 | 0.41 |
| Grey Glass - Double Glazed | | | | | | |
| Awning & Casement window | TND-007-12 | 2.5 | 0.39 | TIM-004-02 W | 2.9 | 0.42 |
| Double Hung window | - | - | - | TIM-006-03 W | - | 0.31 |
| Fixed window | TND-007-12 | 2.5 | 0.39 | TIM-004-02 W | 2.9 | 0.42 |
| Sliding window | TND-042-14 | 3.0 | 0.38 | ATB-003-03 B | 3.1 | 0.39 |
| Bi-Fold window & door | TND-041-15 | 2.7 | 0.35 | TIM-003-02 W | 2.9 | 0.33 |
| Sliding & Stacking door | TND-042-14 | 3.0 | 0.38 | ATB-003-03 B | 3.1 | 0.39 |
| Clear Low E Glass (Planibel G) - Single Glazed | | | | | | |
| Awning & Casement window | TND-007-25 | 3.4 | 0.49 | CMP-003-03 I | 3.4 | 0.47 |
| Double Hung window | TND-025-10 | 3.5 | 0.55 | CMP-002-03 I | 3.7 | 0.61 |
| Fixed window | TND-080-04 | 3.5 | 0.65 | ATB006-01 B | 3.5 | 0.64 |
| Sliding window | TND-081-04 | 3.7 | 0.50 | CMP-005-01 I | 3.9 | 0.50 |
| Bi-Fold window & door | TND-041-24 | 3.3 | 0.43 | CMP-003-03 I | 3.4 | 0.47 |
| Sliding & Stacking door | TND-042-24 | 3.5 | 0.47 | ATB-005-01 B | 3.5 | 0.47 |
| Clear Low E Glass (Planibel G) - Double Glazed | | | | | | |
| Awning & Casement window | TND-007-13 | 1.9 | 0.47 | TIM-005-01 W | 2.6 | 0.50 |
| Double Hung window | TND-025-05 | 2.2 | 0.52 | TIM-006-01 W | 2.6 | 0.53 |
| Fixed window | TND-007-13 | 1.9 | 0.47 | TIM-005-01 W | 2.6 | 0.50 |
| Sliding window | TND-042-12 | 2.4 | 0.48 | TIM-005-01 W | 2.6 | 0.50 |
| Bi-Fold window & door | TND-041-12 | 2.2 | 0.44 | TIM-004-02 W | 2.9 | 0.42 |
| Sliding & Stacking door | TND-042-12 | 2.4 | 0.48 | TIM-005-01 W | 2.6 | 0.50 |
| Neutral Low E Glass (Sunergy) - Single Glazed | | | | | | |
| Awning & Casement window | TND-007-26 | 3.6 | 0.42 | CMP-006-02 I | 3.9 | 0.40 |
| Double Hung window | TND-025-08 | 3.4 | 0.39 | ATB-006-02 B | 3.4 | 0.40 |
| Fixed window | TND-080-03 | 3.8 | 0.54 | CMP-003-01 I | 3.9 | 0.51 |
| Sliding window | TND-081-03 | 4.0 | 0.42 | TIM-001-03 W | 4.3 | 0.42 |
| Bi-Fold window & door | TND-041-25 | 3.4 | 0.38 | TIM-001-04 W | 3.4 | 0.38 |
| Sliding & Stacking door | TND-042-25 | 3.8 | 0.41 | CMP-006-02 I | 3.9 | 0.40 |