

Performance redefined with Metro Glass triple glazing

It is perfect for

Achieving the highest levels of home energy efficiency such as Passive House and Low Carbon design.

Crafted for New Zealand conditions

Because we manufacture locally, our glass technology is designed for New Zealand's diverse regional climate.

Trusted, local supply

Processed right here in New Zealand. This ensures confidence in our supply chain and guarantees compliance with safety and regulatory standards.



If you're building or renovating, your windows are critical for creating a comfortable, light-filled and peaceful home. Talk to us today about how our Low E triple glazing options can give you the perfect fit for your location and your home.

We've led the New Zealand glass industry with some of the biggest innovations for more than 35 years. When you choose Metro Glass you can be confident you are choosing the best quality and performance for your needs.

Call us 0800 545 800, or visit us at www.metroglass.co.nz



TECHNICAL BROCHURE



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Triple glazing technical specification data.



Elevate your home with Metro’s high performance triple glazing range

Our triple glazing range is perfect for achieving the highest levels of home energy efficiency, where windows are a key design feature without sacrificing performance. We can also customise a solution for you if enhanced acoustic and UV protection is required, by adding a laminate into the triple glazed unit.



ThermaLight™ Triple Glazing - Low E

		EN 673	EN410						
		Heat Loss & Condensation	Visibility			Heat Gain		Fading	Sound Transmission
		Ug ²	VLT ³	VLR-E ³	VLR-I ³	SF ³	LSG ^{3,4}	Tdw-ISO ^{3,5}	STC
Make-up mm ¹	Finished Unit Thickness (mm)	U Value Insulation value, lower is better	Visible Light Transmission Higher % means more daylight transmitted	External Reflectance Higher % mean more reflection seen	Internal Reflectance Lower % the easier to see through the glass	Solar Factor (g) Lower number means less solar heat coming in	Selectivity Higher number means more natural light and less solar heat	Damage Weighted Transmission Lower means better fading protection	Sound Transmission Class Higher number means better overall sound reduction
4 - 14 - 4 - 14 - 4	42mm	0.6	70%	16%	15%	49%	1.43	0.57	30
4 - 16 - 4 - 16 - 4	46mm	0.6	70%	16%	15%	49%	1.43	0.57	32
4 - 18 - 4 - 18 - 4	50mm	0.5	70%	16%	15%	49%	1.43	0.57	34

SolarPro™ Light Triple Glazing - Low E

		EN 673	EN410						
		Heat Loss & Condensation	Visibility			Heat Gain		Fading	Sound Transmission
		Ug ²	VLT ³	VLR-E ³	VLR-I ³	SF ³	LSG ^{3,4}	Tdw-ISO ^{3,5}	STC
Make-up mm ¹	Finished Unit Thickness (mm)	U Value Insulation value, lower is better	Visible Light Transmission Higher % means more daylight transmitted	External Reflectance Higher % mean more reflection seen	Internal Reflectance Lower % the easier to see through the glass	Solar Factor (g) Lower number means less solar heat coming in	Selectivity Higher number means more natural light and less solar heat	Damage Weighted Transmission Lower means better fading protection	Sound Transmission Class Higher number means better overall sound reduction
4 - 14 - 4 - 14 - 4	42mm	0.6	66%	15%	16%	36%	1.84	0.50	30
4 - 16 - 4 - 16 - 4	46mm	0.5	66%	15%	16%	36%	1.84	0.50	32
4 - 18 - 4 - 18 - 4	50mm	0.5	66%	15%	16%	35%	1.89	0.50	34

SolarPro™ Plus Triple Glazing - Low E

		EN 673	EN410						
		Heat Loss & Condensation	Visibility			Heat Gain		Fading	Sound Transmission
		Ug ²	VLT ³	VLR-E ³	VLR-I ³	SF ³	LSG ^{3,4}	Tdw-ISO ^{3,5}	STC
Make-up mm ¹	Finished Unit Thickness (mm)	U Value Insulation value, lower is better	Visible Light Transmission Higher % means more daylight transmitted	External Reflectance Higher % mean more reflection seen	Internal Reflectance Lower % the easier to see through the glass	Solar Factor (g) Lower number means less solar heat coming in	Selectivity Higher number means more natural light and less solar heat	Damage Weighted Transmission Lower means better fading protection	Sound Transmission Class Higher number means better overall sound reduction
4 - 14 - 4 - 14 - 4	42mm	0.6	36%	12%	15%	21%	1.71	0.27	30
4 - 16 - 4 - 16 - 4	46mm	0.6	36%	12%	15%	21%	1.71	0.27	32
4 - 18 - 4 - 18 - 4	50mm	0.5	36%	12%	15%	21%	1.71	0.27	34

Single Low E - triple glazing

Classic Triple Glazing Clear- Air - Standard Spacer - Clear- Air - Standard Spacer - Clear

		EN673		EN410					Sound Transmission
		Heat Loss & Condensation	Visibility			Heat Gain		Fading	
		Ug ²	VLT ³	VLR-E ²	VLR-I ³	SF ³	LSG ^{3,4}	Tdw-ISO ^{3,5}	
Make-up mm ¹	Finished Unit Thickness (mm)	U Value	Visible Light Transmission	External Reflectance	Internal Reflectance	Solar Factor (g)	Selectivity	Damage Weighted Transmission	Sound Transmission Class
		Insulation value, lower is better	Higher means more light coming in	Higher mean more reflection seen	Lower means easier to see through the glass	Lower means less solar heat coming in	Higher means more light and less solar heat	Lower means better fading protection	Higher number means better overall sound reduction
4 - 14 - 4 - 14 - 4	42mm	1.8	74%	21%	21%	69%	1.07	0.66	30
4 - 16 - 4 - 16 - 4	46mm	1.8	74%	21%	21%	69%	1.07	0.66	32
4 - 18 - 4 - 18 - 4	50mm	1.7	74%	21%	21%	69%	1.07	0.66	34

Classic data is for comparative purposes based on aluminium spacer and air, Metro do not recommend the use of aluminium spacers with a thermally broken frame system.

Low E Triple Glazing Xcel™ - Argon - Thermal Spacer - Clear - Argon - Thermal Spacer - Clear

		Heat Loss & Condensation	Visibility			Heat Gain		Fading	Sound Transmission
		Ug ²	VLT ³	VLR-E ³	VLR-I ³	SF ³	LSG ^{3,4}	Tdw-ISO ^{3,5}	STC
Make-up mm ¹	Finished Unit Thickness (mm)	U Value Insulation value, lower is better	Visible Light Transmission Higher % means more daylight transmitted	External Reflectance Higher % mean more reflection seen	Internal Reflectance Lower % the easier to see through the glass	Solar Factor (g) Lower number means less solar heat coming in	Selectivity Higher number means more natural light and less solar heat	Damage Weighted Transmission Lower means better fading protection	Sound Transmission Class Higher number means better overall sound reduction
4 - 14 - 4 - 14 - 4	42mm	0.9	72%	18%	18%	55%	1.31	0.61	30
4 - 16 - 4 - 16 - 4	46mm	0.9	72%	18%	18%	55%	1.31	0.61	32
4 - 18 - 4 - 18 - 4	50mm	0.9	72%	18%	18%	55%	1.31	0.61	34

Low E Triple Glazing Xtreme™ - Argon - Thermal Spacer - Clear - Argon - Thermal Spacer - Clear

		Heat Loss & Condensation	Visibility			Heat Gain		Fading	Sound Transmission
		Ug ²	VLT ³	VLR-E ³	VLR-I ³	SF ³	LSG ^{3,4}	Tdw-ISO ^{3,5}	STC
Make-up mm ¹	Finished Unit Thickness (mm)	U Value Insulation value, lower is better	Visible Light Transmission Higher % means more daylight transmitted	External Reflectance Higher % mean more reflection seen	Internal Reflectance Lower % the easier to see through the glass	Solar Factor (g) Lower number means less solar heat coming in	Selectivity Higher number means more natural light and less solar heat	Damage Weighted Transmission Lower means better fading protection	Sound Transmission Class Higher number means better overall sound reduction
4 - 14 - 4 - 14 - 4	42mm	0.9	68%	17%	19%	37%	1.84	0.53	30
4 - 16 - 4 - 16 - 4	46mm	0.8	68%	17%	19%	37%	1.84	0.53	32
4 - 18 - 4 - 18 - 4	50mm	0.8	68%	17%	19%	37%	1.84	0.53	34

Low E Triple Glazing SunX Grey™ - Argon - Thermal Spacer - Clear - Argon - Thermal Spacer - Clear

		Heat Loss & Condensation	Visibility			Heat Gain		Fading	Sound Transmission
		Ug ²	VLT ³	VLR-E ³	VLR-I ³	SF ³	LSG ^{3,4}	Tdw-ISO ^{3,5}	STC
Make-up mm ¹	Finished Unit Thickness (mm)	U Value Insulation value, lower is better	Visible Light Transmission Higher % means more daylight transmitted	External Reflectance Higher % mean more reflection seen	Internal Reflectance Lower % the easier to see through the glass	Solar Factor (g) Lower number means less solar heat coming in	Selectivity Higher number means more natural light and less solar heat	Damage Weighted Transmission Lower means better fading protection	Sound Transmission Class Higher number means better overall sound reduction
4 - 14 - 4 - 14 - 4	42mm	0.9	37%	13%	17%	22%	1.68	0.29	30
4 - 16 - 4 - 16 - 4	46mm	0.9	37%	13%	17%	22%	1.68	0.29	32
4 - 18 - 4 - 18 - 4	50mm	0.9	37%	13%	17%	22%	1.68	0.29	34

Important considerations

- 1/ **Frame compatibility**
Triple glazed units require a larger glazing pocket than double glazed units, so you'll need to check whether your window frame and building design can accommodate this requirement.
- 2/ **Weight**
Triple glazing units are heavier than double glazing units by around 30-50% this will affect handling and installation requirements, and may affect building structure and foundation design.
- 3/ **Thermal breakage risk**
Heat build up in glass can lead to thermal breakage. This risk can be reduced by using heat treated glass.
- 4/ **Wind load and human impact**
Wind load and human impact rules apply for triple glazing on the outer and innermost panes. There are also considerations around pressure differentials between the cavities in colder climates for triple glazing. Sometimes this necessitates wider spacers and/or thicker glass, please consult with Metro Glass for applications in cold climates.
- 5/ **Thermal performance**
The ability to use two Low E coated panes of glass allow higher thermal performance, for example glass U values of 0.5 W/m2.K are possible with 4-18-4-18-4 (50mm finished unit).
- 6/ **Solar control colour appearance**
Metro SolarPro™ Plus has a grey tone which is part of the Low E coating. The advantage of this is that unlike other tinted glass that gets darker as the glass gets thicker, SolarPro™ Plus provides a consistent colour, even when used across different glass thicknesses.
- 7/ **External condensation**
Dew on the outer surface is a natural occurrence, commonly seen in both high performance double glazing and triple glazing. This particularly occurs in homes that have no eaves, are sheltered from prevailing breezes, and/or have high humidity/cold conditions overnight.
- 8/ **Sound reduction**
Our triple glazing products all reduce sound levels in your home. If stronger noise reduction is important we can add special acoustic laminate to your Low E glass or alternatively we recommend engaging with an acoustics engineer.

NOTES:

¹Metro Performance Glass triple glazed unit make ups are designed with the single Low E to surface 2 and for two Low E coated surfaces they will be to surface 2 and surface 4 as described above the tabulation for the make-up. If a Laminate is added this would be to surface 5-6 so the inside of the Triple glazed unit. The exception to this layout philosophy is in the case of a tint and Low E mix triple glazing unit, which will see the Tint positioned outermost to surface 1-2 and the Low E coating to surface 4 (for two Low E coated surfaces this would be surface 3 and 5).
For the middle pane Metro recommend it should ideally be heat-treated (not annealed) to reduce the risk of thermal breakage - please discuss with Metro Glass your thermal risk assessment to confirm an appropriate makeup.
²Ug Value is centre of glass (in W/m2.K) calculated for glass oriented vertically, with proprietary software using CEN boundary conditions. Cavity infills based on air or argon = (90% argon, 10% air mix).
³SC, SF, VLT, VLR-E, VLR-I, Tdw-ISO calculated with proprietary software using CEN boundary conditions.
⁴LSG = VLT / SF (If the LSG is greater than 10, then the glass transmits more light than total solar heat).
⁵Tdw-ISO is a damage-weighted transmittance from the International Standards Organization (ISO) based on the contribution to fading at each wavelength from 300nm to 700nm that include the UV and Visible parts of the solar spectrum.

Tolerances - stated performance values can vary based on variations during production, use of float glass substrates on the basis of availability etc. Allowable variation is 3 basis points above or below (+/- 3) the specified values for VLT, VLR-E, VLR-I and SF and +/- 0.1 for U-Value.
Thermal Risk -Tinted and the middle glass pane's of triple glazed units are subject to greater heat build up. This heat build up is greater on building elevation's that are exposed to direct sunlight. Heat build up in glass can lead to thermal breakage. This risk can be eliminated through heat treatment of the glass. Please discuss with Metro if you would like a thermal assessment carried out to determine the risk.
Internal Condensation - Low E triple glazed units make the internal glass temperature warmer and reduce the likelihood of condensation on the inner glass surface.
External Condensation (Dew) - Low E triple glazed units are so efficient they can, subject to external environmental conditions and factors, sometimes cause external condensation as the outer pane surface 1 can get colder due to less heat loss from the inside.
Quality – It should be noted that each pane of triple glazing units is subject to the same quality standards as single glass. The applicable standard is AS/NZ4687:2000 standard and is applied in conjunction with the viewing criteria documented by the Window and Glass Association (www.wgan.co.nz Guide to Visual Quality of Glass in Residential Buildings) and MBIE Guide (www.building.govt.nz Guide to tolerances, materials and workmanship in new residential construction)

Building Code Acceptable Solution H1/AS1
Table E.1.1.1 available on MBIE