METRO
PERFORMANCE GLASS

TECHNICAL BROCHURE

Double glazing technical specification data.

Low E
Double Glazing

TOITŪ
CARBON REDUCE
ISO 14064-1
ORGANISATION

Red List Free

METRO'S HIGH PERFORMANCE DOUBLE GLAZING IS CRAFTED FOR NEW ZEALAND CONDITIONS

Talk to us about how our Low E range can give you the perfect fit for your performance needs. Our double glazing glass is Declare Label certified as Red List Free, meaning they contain no toxic ingredients.

Classic Double Glazing

Clear - Air* - Standard Spacer - Clear

	Building Code Acceptable Solution H1/AS1 Schedule E.1.1.1 (see schedule notes)				EN 673 Heat Loss & Condensation	EN410 Visibility			EN410 Heat Gain			EN410 Fading
	Window System Material Type by Climate Zone				Ug[2]	VLT[3]	VLR-E[3]	VLR-I[3]	SF[3]	SC[3]	LSG[3,4]	Tdw-ISO[3,5]
Make-up mm[1]	Standard Aluminium	Thermal Break Aluminium	uPVC	Timber	U Value Insulation value, lower is better	Visible Light Transmission Higher means more light coming in	External Reflectance Higher mean more reflection seen	Internal Reflectance Lower means easier to see through the glass	Solar Factor (g) Lower means less solar heat coming in	Shading co-efficient Lower means less solar heat gain and more shading	Selectivity Higher means more light and less solar heat	Damaged Weighted Transmission Lower means better fading protection
4-8-4					3.1	81%	15%	15%	77%	0.88	1.05	0.74
4-10-4					2.9	81%	15%	15%	77%	0.88	1.05	0.74
4-12-4					2.8	81%	15%	15%	77%	0.88	1.05	0.74
4-14-4					2.8	81%	15%	15%	77%	0.88	1.05	0.74
4-16-4					2.7*	81%	15%	15%	77%	0.88	1.05	0.74
4-18-4					2.7*	81%	15%	15%	77%	0.88	1.05	0.74

*(*Note argon needs to be requested to achieve U Value of 2.6)*

Low E Max™ Double Glazing

Max™ Low E - Argon - Thermal Spacer - Clear

	Building Code Acceptable Solution H1/AS1 Schedule E.1.1.1 (see schedule notes)				EN 673 Heat Loss & Condensation	EN410 Visibility			EN410 Heat Gain			EN410 Fading
	Window System Material Type by Climate Zone				Ug[2]	VLT[3]	VLR-E[3]	VLR-I[3]	SF[3]	SC[3]	LSG[3,4]	Tdw-ISO[3,5]
Make-up mm[1]	Standard Aluminium	Thermal Break Aluminium	uPVC	Timber	U Value Insulation value, lower is better	Visible Light Transmission Higher means more light coming in	External Reflectance Higher mean more reflection seen	Internal Reflectance Lower means easier to see through the glass	Solar Factor (g) Lower means less solar heat coming in	Shading co-efficient Lower means less solar heat gain and more shading	Selectivity Higher means more light and less solar heat	Damaged Weighted Transmission Lower means better fading protection
4-8-4					2.0	69%	12%	13%	57%	0.66	1.21	0.64
4-10-4			All Zones	All Zones	1.8	69%	12%	13%	57%	0.66	1.21	0.64
4-12-4			All Zones	All Zones	1.6	69%	12%	13%	57%	0.66	1.21	0.64
4-14-4			All Zones	All Zones	1.5	69%	12%	13%	57%	0.66	1.21	0.64
4-16-4			All Zones	All Zones	1.5	69%	12%	13%	57%	0.66	1.21	0.64
4-18-4			All Zones	All Zones	1.5	69%	12%	13%	57%	0.66	1.21	0.64

Low E Xcel™ Double Glazing

Xcel™ Low E - Argon - Thermal Spacer - Clear

	Building Code Acceptable Solution H1/AS1 Schedule E.1.1.1 (see schedule notes)				EN 673 Heat Loss & Condensation	EN410 Visibility			EN410 Heat Gain			EN410 Fading
	Window System Material Type by Climate Zone				Ug[2]	VLT[3]	VLR-E[3]	VLR-I[3]	SF[3]	SC[3]	LSG[3,4]	Tdw-ISO[3,5]
Make-up mm[1]	Standard Aluminium	Thermal Break Aluminium	uPVC	Timber	U Value Insulation value, lower is better	Visible Light Transmission Higher means more light coming in	External Reflectance Higher mean more reflection seen	Internal Reflectance Lower means easier to see through the glass	Solar Factor (g) Lower means less solar heat coming in	Shading co-efficient Lower means less solar heat gain and more shading	Selectivity Higher means more light and less solar heat	Damaged Weighted Transmission Lower means better fading protection
4-8-4			All Zones	All Zones	1.7	80%	12%	12%	59%	0.68	1.36	0.69
4-10-4			All Zones	All Zones	1.4	80%	12%	12%	59%	0.68	1.36	0.69
4-12-4		Zones 1-4	All Zones	All Zones	1.3	80%	12%	12%	59%	0.68	1.36	0.69
4-14-4		All Zones	All Zones	All Zones	1.1	80%	12%	12%	59%	0.68	1.36	0.69
4-16-4		All Zones	All Zones	All Zones	1.1	80%	12%	12%	59%	0.68	1.36	0.69
4-18-4		All Zones	All Zones	All Zones	1.1	80%	12%	12%	59%	0.68	1.36	0.69

Low E Double Glazing — Xtreme™ Low E - Argon - Thermal Spacer - Clear

	Building Code Acceptable Solution H1/AS1 Schedule E.1.1.1 (see schedule notes)				EN 673 Heat Loss & Condensation	EN410 Visibility			EN410 Heat Gain			Fading
	Window System Material Type by Climate Zone				U_g[2]	VLT[3]	VLR-E[3]	VLR-I[3]	SF[3]	SC[3]	LSG[3,4]	Tdw-ISO[3,5]
Make-up mm[1]	Standard Aluminium	Thermal Break Aluminium	uPVC	Timber	U Value Insulation value, lower is better	Visible Light Transmission Higher means more light coming in	External Reflectance Higher mean more reflection seen	Internal Reflectance Lower means easier to see through the glass	Solar Factor (g) Lower means less solar heat coming in	Shading co-efficient Lower means less solar heat gain and more shading	Selectivity Higher means more light and less solar heat	Damaged Weighted Transmission Lower means better fading protection
4-8-4			All Zones	All Zones	1.6	74%	12%	13%	41%	0.47	1.80	0.58
4-10-4			All Zones	All Zones	1.4	74%	12%	13%	40%	0.46	1.85	0.58
4-12-4		Zones 1-4	All Zones	All Zones	1.2	74%	12%	13%	40%	0.46	1.85	0.58
4-14-4		All Zones	All Zones	All Zones	1.1	74%	12%	13%	40%	0.46	1.85	0.58
4-16-4		All Zones	All Zones	All Zones	1.0	74%	12%	13%	40%	0.46	1.85	0.58
4-18-4		All Zones	All Zones	All Zones	1.1	74%	12%	13%	40%	0.46	1.85	0.58

Low E Double Glazing — SunX™ Grey Low E - Argon - Thermal Spacer - Clear

	Building Code Acceptable Solution H1/AS1 Schedule E.1.1.1 (see schedule notes)				EN 673 Heat Loss & Condensation	EN410 Visibility			EN410 Heat Gain			Fading
	Window System Material Type by Climate Zone				U_g[2]	VLT[3]	VLR-E[3]	VLR-I[3]	SF[3]	SC[3]	LSG[3,4]	Tdw-ISO[3,5]
Make-up mm[1]	Standard Aluminium	Thermal Break Aluminium	uPVC	Timber	U Value Insulation value, lower is better	Visible Light Transmission Higher means more light coming in	External Reflectance Higher mean more reflection seen	Internal Reflectance Lower means easier to see through the glass	Solar Factor (g) Lower means less solar heat coming in	Shading co-efficient Lower means less solar heat gain and more shading	Selectivity Higher means more light and less solar heat	Damaged Weighted Transmission Lower means better fading protection
4-8-4			All Zones	All Zones	1.7	41%	11%	11%	25%	0.29	1.64	0.32
4-10-4			All Zones	All Zones	1.4	41%	11%	11%	25%	0.29	1.64	0.32
4-12-4		Zones 1-4	All Zones	All Zones	1.3	41%	11%	11%	25%	0.28	1.64	0.32
4-14-4		All Zones	All Zones	All Zones	1.1	41%	11%	11%	24%	0.28	1.71	0.32
4-16-4		All Zones	All Zones	All Zones	1.1	41%	11%	11%	24%	0.28	1.71	0.32
4-18-4		All Zones	All Zones	All Zones	1.1	41%	11%	11%	24%	0.28	1.71	0.32

Low E Double Glazing — SunX™ Reflect Low E - Argon - Thermal Spacer - Clear

	Building Code Acceptable Solution H1/AS1 Schedule E.1.1.1 (see schedule notes)				EN 673 Heat Loss & Condensation	EN410 Visibility			EN410 Heat Gain			Fading
	Window System Material Type by Climate Zone				U_g[2]	VLT[3]	VLR-E[3]	VLR-I[3]	SF[3]	SC[3]	LSG[3,4]	Tdw-ISO[3,5]
Make-up mm[1]	Standard Aluminium	Thermal Break Aluminium	uPVC	Timber	U Value Insulation value, lower is better	Visible Light Transmission Higher means more light coming in	External Reflectance Higher mean more reflection seen	Internal Reflectance Lower means easier to see through the glass	Solar Factor (g) Lower means less solar heat coming in	Shading co-efficient Lower means less solar heat gain and more shading	Selectivity Higher means more light and less solar heat	Damaged Weighted Transmission Lower means better fading protection
4-8-4			All Zones	All Zones	1.7	31%	45%	19%	22%	0.26	1.41	0.27
4-10-4			All Zones	All Zones	1.4	31%	45%	19%	22%	0.25	1.41	0.27
4-12-4		Zones 1-4	All Zones	All Zones	1.3	31%	45%	19%	22%	0.25	1.41	0.27
4-14-4		All Zones	All Zones	All Zones	1.1	31%	45%	19%	22%	0.25	1.41	0.27
4-16-4		All Zones	All Zones	All Zones	1.1	31%	45%	19%	22%	0.25	1.41	0.27
4-18-4		All Zones	All Zones	All Zones	1.1	31%	45%	19%	22%	0.25	1.41	0.27

ADDING TINT OR LAMINATE FOR EXTRA PERFORMANCE?

Not all tints are the same. Body tints deepen in colour as the glass thickness increases. Where as the benefit of tints already incorporated into the Low E coating means the colour remains consistent regardless of the glass thickness.

Both types of tints enhance fading reduction and solar control, while reducing incoming light without affecting the thermal U-value. Laminates add a composite interlayer, improving acoustic performance and fading reduction with minimal impact on light transmission.

Classic Double Glazing	Make-up mm[1]	U_g[2] Heat Loss & Condensation	VLT[3] Visible Light Transmission	VLR-E[3] External Reflectance	VLR-I[3] Internal Reflectance	SF[3] Solar Factor g value	SC[3] Shading co-efficient	LSG[3,4] Light to solar gain ratio	Tdw-ISO[3,5] Fading Reduction
Green Tint	4-12-4	2.9	73%	13%	14%	55%	0.64	1.31	0.60
Bronze Tint	4-12-4	2.9	56%	9%	13%	60%	0.68	0.95	0.46
Grey Tint	4-12-4	2.9	52%	8%	13%	56%	0.64	0.92	0.45

Laminated Double Glazing	Make-up mm[1]	U_g[2] Heat Loss & Condensation	VLT[3] Visible Light Transmission	VLR-E[3] External Reflectance	VLR-I[3] Internal Reflectance	SF[3] Solar Factor g value	SC[3] Shading co-efficient	LSG[3,4] Light to solar gain ratio	Tdw-ISO[3,5] Fading Reduction
Clear Float	4-12-6.38	2.9	80%	15%	15%	75%	0.86	1.07	0.57
Green Tint	4-12-6.38	2.9	71%	13%	14%	59%	0.67	1.20	0.48
Bronze Tint	4-12-6.38	2.9	55%	9%	13%	64%	0.74	0.86	0.36
Grey Tint	4-12-6.38	2.9	50%	8%	12%	61%	0.70	0.82	0.35

Low E Max Double Glazing	Make-up mm[1]	U_g[2] Heat Loss & Condensation	VLT[3] Visible Light Transmission	VLR-E[3] External Reflectance	VLR-I[3] Internal Reflectance	SF[3] Solar Factor g value	SC[3] Shading co-efficient	LSG[3,4] Light to solar gain ratio	Tdw-ISO[3,5] Fading Reduction
Laminated	4-12-6.38	1.6	68%	12%	12%	56%	0.65	1.20	0.50
Green Tint	4-12-4	1.6	61%	11%	11%	49%	0.57	1.24	0.52
Bronze Tint	4-12-4	1.6	47%	8%	10%	51%	0.59	0.92	0.39
Grey Tint	4-12-4	1.6	44%	7%	10%	48%	0.55	0.90	0.39

Low E Xcel Double Glazing	Make-up mm[1]	U_g[2] Heat Loss & Condensation	VLT[3] Visible Light Transmission	VLR-E[3] External Reflectance	VLR-I[3] Internal Reflectance	SF[3] Solar Factor g value	SC[3] Shading co-efficient	LSG[3,4] Light to solar gain ratio	Tdw-ISO[3,5] Fading Reduction
Laminated	4-12-6.38	1.3	79%	12%	12%	58%	0.67	1.36	0.55
Green Tint	4-12-4	1.3	71%	11%	12%	46%	0.53	1.54	0.56
Bronze Tint	4-12-4	1.3	54%	8%	10%	45%	0.51	1.20	0.42
Grey Tint	4-12-4	1.3	50%	7%	10%	43%	0.49	1.16	0.42

Low E Xtreme Double Glazing	Make-up mm[1]	U_g[2] Heat Loss & Condensation	VLT[3] Visible Light Transmission	VLR-E[3] External Reflectance	VLR-I[3] Internal Reflectance	SF[3] Solar Factor g value	SC[3] Shading co-efficient	LSG[3,4] Light to solar gain ratio	Tdw-ISO[3,5] Fading Reduction
Laminated	4-12-6.38	1.2	74%	12%	13%	40%	0.46	1.85	0.50
Green Tint	4-12-4	1.2	66%	12%	12%	41%	0.47	1.61	0.50
Bronze Tint	4-12-4	1.2	50%	8%	11%	36%	0.42	1.39	0.36
Grey Tint	4-12-4	1.2	47%	8%	11%	35%	0.40	1.34	0.37

Low E SunX Grey Double Glazing	Make-up mm[1]	U_g[2] Heat Loss & Condensation	VLT[3] Visible Light Transmission	VLR-E[3] External Reflectance	VLR-I[3] Internal Reflectance	SF[3] Solar Factor g value	SC[3] Shading co-efficient	LSG[3,4] Light to solar gain ratio	Tdw-ISO[3,5] Fading Reduction
Laminated	4-12-6.38	1.3	40%	11%	11%	24%	0.28	1.67	0.27

Low E SunX Reflect Double Glazing	Make-up mm[1]	U_g[2] Heat Loss & Condensation	VLT[3] Visible Light Transmission	VLR-E[3] External Reflectance	VLR-I[3] Internal Reflectance	SF[3] Solar Factor g value	SC[3] Shading co-efficient	LSG[3,4] Light to solar gain ratio	Tdw-ISO[3,5] Fading Reduction
Laminated	4-12-6.38	1.3	30%	45%	19%	22%	0.25	1.36	0.21

NEW ZEALAND BUILDING CODE CLIMATE ZONES

When selecting the right double glazing for your home, the building code stipulates the minimum standard, by climate zone as pictured below:

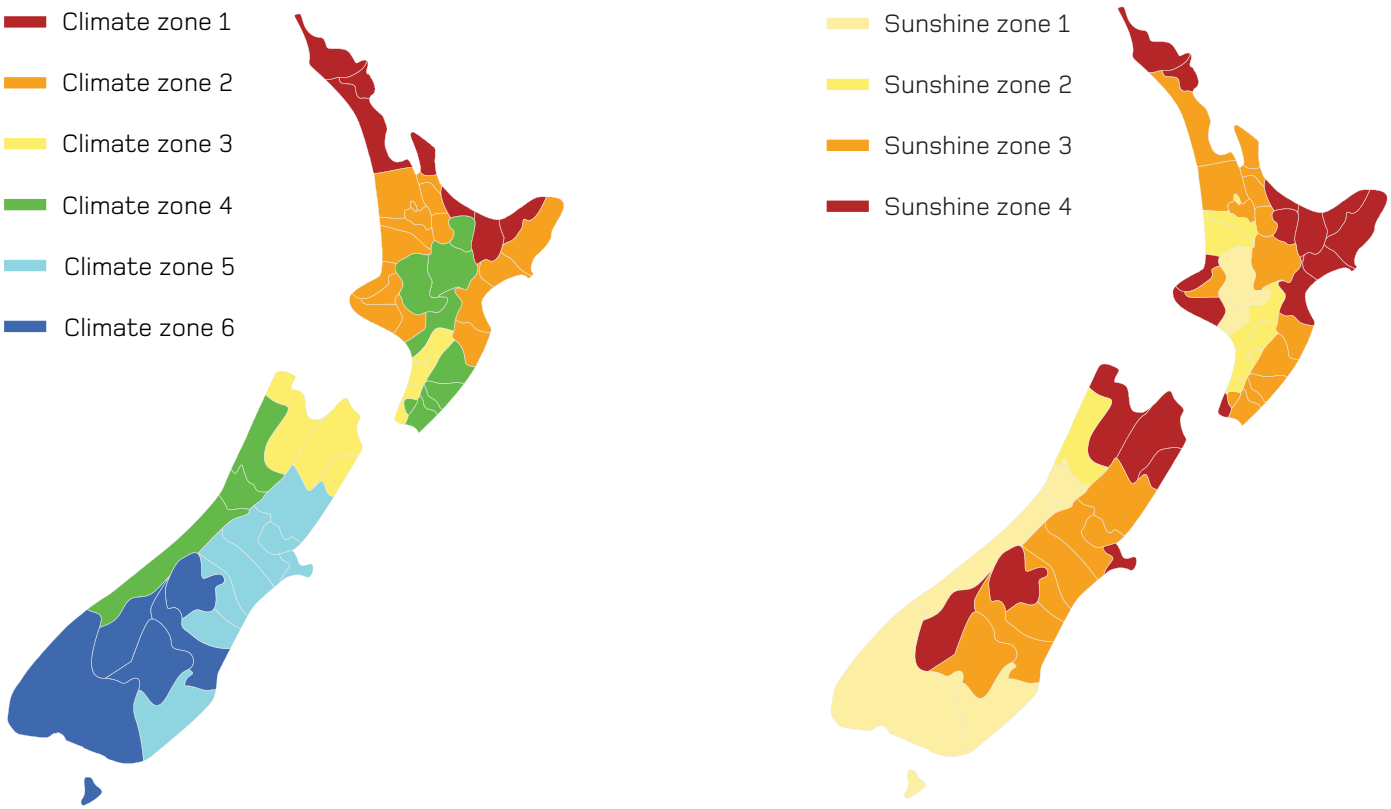
The climate zones also align to territorial authorities to enable clear performance requirements for building consents.

The minimum requirement by system type is shown in the data tables and info graphic on the back page, for the three stages of implementation.

Across New Zealand there are also zones with significant amounts of sunshine in the summer, resulting in the potential for overheating.

Choose double glazing with a lower solar factor to reduce the chance of overheating. Illustrated as Sunshine Zone 4 the most likely to have high sunshine hours.

NZ CLIMATE ZONES (NZ BUILDING CODE) & SUNSHINE ZONES (NIWA DATA)



NOTES:

All Metro Low E Double Glazing units are argon filled and have thermal spacers.
[1]Low E Coating on Surface 2 for standard units and Surface 3 for tint units.
[2]Ug Value is centre of glass (COG 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).
[3]SC, SF, VLT, VLR-E, VLR-I, Tdw-ISO calculated with proprietary software using CEN boundary conditions.
[4]LSG = VLT / SF (If the LSG is greater than 1.0, then the glass transmits more light than total solar heat).
[5]Tdw-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.
Condensation - Low E double glazed units make the internal glass temperature warmer and reduce the likelihood of condensation on the inner glass surface.
External Condensation (Dew) - Low E double 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 double glazing units is subject to the same quality standards as single glass. The applicable standard is AS/NZ4667.2000 standard and is applied in conjunction with the viewing criteria documented by the Window and Glass Association (www.wganz.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 Solutions - Table E1.1.1 available on MBIE

METRO
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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 double 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**

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