

THERMOSASH

Rooflights & Atriums

THERMOSASH ALPHA GLAZING SYSTEM



Thermosash
BUILDING ENVELOPE SOLUTIONS™

Thermosash Commercial Ltd

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Auckland 0610, New Zealand

www.thermosash.co.nz



**Combine
the benefits
of offsite
production
and modern
construction
techniques
- Unitised
Facades offer
near limitless
design
possibilities**

bringing your boldest architectural visions to life while enjoying the practical benefits of speed of installation, just-in-time site delivery, and single point warranty.

Shape the future of urban design and aesthetics with a high performance Thermosash Unitised Facade solution.

**Our Aluminium
is green to the
core.**

Thermosash is partnered with the lowest embodied carbon NZ-owned extruder in the world*.

The combination of high recycled content and low carbon virgin material forms the super-low embodied carbon high quality extrusion that Thermosash uses.

* Achieving Toitū Carbonreduce certification which far out performs the global average. (Independent audits to stringent European standard PAS 2050 are regularly undertaken, please contact us for the most up to date carbonreduce CO2e/kg of aluminium figures).

Thermosash recycles 100% of all metal waste products produced during manufacturing operations.

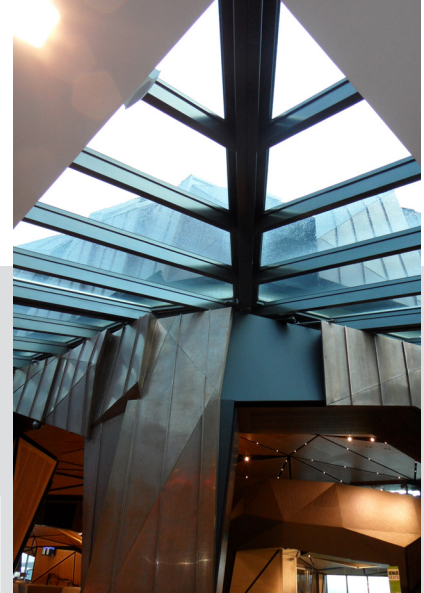
We exclusively use local powder coaters who have stringent chemical handling processes and reuse or responsibly dispose of all waste powder.



**Auckland University of
Technology**
SIR PAUL REEVES BUILDING



ANZ Triangle Building
CHRISTCHURCH



**Wellington International
Airport - THE ROCK**

OVERVIEW

ALPHA GLAZING SYSTEM

The Thermosash Alpha Glazing System is a sophisticated and high performance solution for all high end skylight and sloped glazing applications such as external canopies or internal skylight and atrium glazing, as well as an economical solution for factories, warehouses, hangers and grandstands. This design style of overhead glazing employs an aluminium extrusion that encapsulates a minimum of two edges that are then connected back to the primary structure.

Due to potential exposure to high wind, seismic, snow, and live loads etc., it is necessary for these types of systems to be specifically designed and engineered.



PRODUCT SPECIFICATION

MASTERSPEC

We recommend using Masterspec 4251T Commercial Windows when specifying this system type.

CAD DOWNLOADS

Alpha Glazing CAD downloads are available on our website:

<https://www.thermosash.co.nz/downloads-resources/cad-downloads/rooflight-downloads/rooflight-alpha-glazing/alpha-atria-downloads/>

PRODUCT PERFORMANCE

KEY PERFORMANCE FEATURES

- Can be installed to a minimum slope of 5 degrees
- Integral drainage cavities
- Commercial glazing engagements to cope with higher wind loads
- Condensation control (where specified)
- Thermally broken
- Ability to provide a different colour from inside to outside
- Can accommodate all recognized glass thicknesses used in commercial glazing
- Special splicing and connection features critical for weathering
- The Alpha systems are dry-glazed unless aesthetically otherwise required
- Bars are designed to accommodate co-extruded backing gaskets to minimise long-term shrinkage problems
- Glass is retained with gaskets fitted inside and out, primarily as a weather seal, but also to cushion against vibration and potential glass breakage
- Minimum construction R-value values as relevant to product selection

PERFORMANCE TESTING

Independently laboratory tested to IANZ (International Accreditation New Zealand)

B1/VM1 AS/NZS1170
Structural Design Actions

B2/AS1 Durability [based on in-service history]

F2 NZS4223
Glazing in Buildings

E2 NZS/AS4284:2008
Water / Air Pressure/ Air Leakage - exceeds minimum requirements

BUILDING CODE PERFORMANCE

Thermosash engineers to the design and performance requirements of each individual project in accordance with the relevant codes - view the table Building Code - Demonstration of Compliance on page 5 & 6.

INTENDED USE

CLASSIFICATION

Internal Skylight and External Canopy for Commercial, Industrial and Residential use in accordance with the A1 Building Use Classification and A3 building importance levels 1-5.

BUILDING TYPE

- High-rise
- Low-rise
- Specific design

BUILDING LOCATION

Overhead glazing products require a high level of sophistication which is often overlooked; special design features are required to cope with considerably higher water loadings, heat gain or loss (which introduces condensation) and in particular the risk associated with accommodating costly higher specification products (e.g. high performance laminated and insulated glass units) used to overcome these particular problems without compromising their product warranties.

Thermosash provides custom design solutions taking into consideration wind zones, climate zones, corrosion zones, seismic risk areas and building importance levels for each project.

CONDITIONS OF USE

The Alpha Glazing System must be installed by an approved Thermosash installer. The architect, engineer or specifier must confirm all of the project requirements prior to fabrication, including but not limited to climate conditions, glass selections, structural differential movement reports, performance requirements for glass and acoustics, surface finishes and hardware.

CAPABILITIES

FRAME SIZES

The system is adaptable to fit a range of 35mm - 110mm

MAXIMUM SPANNING ABILITY

Glass size and primary structure support is your only limitation. We can source your specific glass requirements to meet your projects needs.

Thermosash specifically engineers the best suite option for your project taking into consideration span, structural system, load imposed by glass thickness, seismic, wind & snow loading. The spanning ability will vary depending on the above.

OVERHEAD GLAZING APPLICATIONS

- Lean-to skylights
- Ridge skylights
- Double pitch skylights
- Pyramid skylights
- Multi-faceted pyramids
- Hip ridge skylights
- Segmented barrel vault skylights
- Curved barrel vault skylights
- Vertical glazing

INTEGRATED ELEMENTS

- Alpha Glazing System integrates with the Thermosash Delta Suite
- The Alpha range can incorporate opening sashes or banks of louvres - BMS operated if required
- Almost any type of glass can be incorporated including ceramic fritting to provide an element of solar shading or decorative motif

MATERIALS

MATERIAL COMPOSITION

Each project will have specific engineered and designed component solutions, fabricated in New Zealand and provided as a complete custom system, which incorporates common materials such as:

Aluminium, Steel, VM Zinc Cladding, Glass, Structural Silicone, Gaskets, Neoprene Rubber, Nylon, Molybdenum Disulfide, and PVB Polyvinyl Butyral.

MATERIAL GRADE

Alloy designation to comply with AS/NZS 1866. Extruded for anodising or powder coating. Aluminium extrusions from 6060 grade and with a Temper T6 alloy.

FINISH

Polyester powdercoat - both standard and special colours available. (Polyester powder organic coating in accordance with WGANZ PQAS and AS 3715, and AAMA 2604).

Anodised - all anodised colours available - commercial grade 20 Micron finish recommended

PVF2 Fluorocarbon finishes - available on request

FIXINGS

Fixings and fastenings exposed to the weather are type 316 or 304 stainless steel typically but other suitable fixings back to structure may be designed for specific project requirements complying with AS/NZS 4680.

Fixing gauge and length in accordance with Thermosash PS1.

MAINTENANCE REQUIREMENTS

A maintenance manual is provided on completion of each project. It is recommended by almost all material suppliers that building washing should occur every 3-6 months, depending on location, to prevent environmental pollutants from corroding metals and to maintain the material warranties.

WARRANTY

The standard warranty is 10 years from the date of practical completion for these products. This covers workmanship and weather tightness, providing the subcontract includes fabrication, installation and glazing of all components.

All warranties are subject to service and maintenance requirements.

SUSTAINABILITY

SUSTAINABLE MANUFACTURING

Thermosash manufactures all components in New Zealand, and primarily source materials where available from the New Zealand market. We recycle 100% of all metal waste products produced during manufacturing operations.

ALUMINIUM EXTRUSIONS

Our extrusions are a combination of high recycled content and low carbon virgin material from a local NZ remelt facility - achieving a super low carbon footprint that significantly outperforms readily available global alternatives*.

* Achieving Toitū Carbonreduce certification which out performs the global average. (Independent audits to stringent European standard PAS 2050 are regularly undertaken, please contact us for the most up to date carbonreduce CO2e/kg of aluminium figures).

We exclusively use local powder coaters who have stringent chemical handling processes and reuse or responsibly dispose of all waste powder.

REDUCTION OF OPERATIONAL EMISSIONS

Through a full measurement and target reductions audit undertaken by Toitū Envirocare, Thermosash Commercial Ltd achieved Carbonreduce Certification with result of 1,369.93 tCO2e (tons of carbon dioxide equivalent) in the 2021/2022 NZ financial year period. This established a baseline for subsequent emission reduction targets going forwards. Please contact us for up to date certification figures.

BENEFITS

Thermosash is a New Zealand based business and has been engineering and manufacturing specific design facade solutions across the country since 1973. We deliver solutions using our trusted and proven systems, offering increased value in terms of;

- 50 years of experience and expertise in the facade solutions industry in New Zealand
- ongoing trust within the industry
- high performance solutions
- durability of systems and longevity of product lifespan
- totally integrated service with ECI /ECE - engineering, producer statement generation, full shop drawings, manufacture and installation.
- design and detail to accommodate seismic loads and inter-storey differential movement, as well as wind loads

- Risk mitigation through one provider construction methodology and one warranty.

UNITISED SYSTEM ADVANTAGES

- Off-site fabrication and glazing
- Quality assurance controlled within a factory environment
- Speeds up site installation process due to modular construction - enclosing buildings rapidly and reducing onsite programme time
- Reduces on-site delays related to inclement weather - fabrication can continue even if site falls behind Unitised panels can be stored on completed floors in loading crates ready for installation
- Dramatically reduces scaffold and crane requirements
- Specifically engineered to accommodate environmental conditions and design constraints of the project
- Can incorporate a variety of cladding materials and integrated elements

COST SAVINGS

- Reduced number of junctions with other trades if Thermosash engineers, manufactures and installs the building envelope elements such as curtainwall, glazed and non-vision unitised panels, rainscreen, skylights, mechanical air louvres, solar shading and integrated elements, architectural metal folding, canopies, balustrades, flashings etc.
- Reduced number of council inspections during construction and possible delays, saving on compliance costs
- Specifically designed and engineered facade solutions that offer high performance and durability which contribute to cost savings on energy and maintenance over the lifespan of the building.
- flashings etc.

BUILDING CODE - DEMONSTRATION OF COMPLIANCE

Thermosash expertly engineers and designs each bespoke facade to the design and performance requirements of the individual project. We ensure that all compliance claims are backed by a comprehensive set of documents, including PS1 Design and PS3 Construction Producer Statements as a compliance pathway.

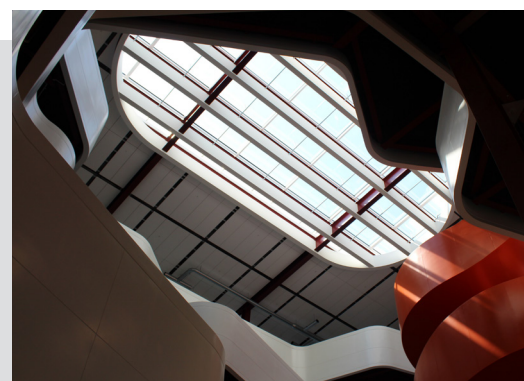
| BUILDING CODE | DEMONSTRATION OF COMPLIANCE |
|--|--|
| B1 STRUCTURE | <p>COMPLIANCE BY B1/VM1</p> <p>Compliance with B1 is shown by way of engineering calculations and/or testing, and reports are attached to the compliance pathway submission.</p> |
| B2 DURABILITY | <p>ACCEPTABLE SOLUTIONS B2/AS1</p> <p>There are not Acceptable Solutions available for aluminium and steel, and protection is provided through surface treatment in accordance with:</p> <ul style="list-style-type: none"> • AS/NZS 2312:2014 - Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings. • AAMA 2605-05 - Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels. • AS 37155:2002 - Metal finishing thermoset powder coatings for architectural applications of aluminium and aluminium alloys. • AS 1231:2000 - Aluminium and aluminium alloys - anodic oxidation coatings. • WAZN - Specification for powder coatings on architectural aluminium products. • SNZ TS 3404:2018 - Durability requirements for steel structures and components <p>COMPLIANCE BY B2/VM1</p> <p>All elements of the Thermosash product/system are specified by Thermosash to (with only normal maintenance) satisfy the performance requirements of the Building Code for 5 years (Surface Finish), 15 years (System), 50 years (Fixings/Connections) as appropriate.</p> <p>Generally, all elements are designed from aluminium. Where engineering requirements demand stronger materials stainless steel (304 or 316 as appropriate), or steel (coated to SNZ TS 3404:2018) will be used.</p> |
| C3 FIRE affecting areas beyond the source | <p>COMPLIANCE IF APPLICABLE</p> <p>In the event that the incorporation of an element into our Alpha Glazing System solution is necessary to adhere to Building Code C3 Fire affecting areas beyond the source, Thermosash will provide an engineered solution along with a comprehensive compliance pathway for approval including a PS3 Construction Producer Statement (PS1 Design by Fire Engineer).</p> <p>We are not fire engineers and do not engage in the fire design of buildings, however, our products can be tailored to support compliance with Clause C3. We recommend collaborating with a fire engineer to ensure proper customization and adherence to fire safety requirements.</p> |

| BUILDING CODE | DEMONSTRATION OF COMPLIANCE |
|---------------------------------------|---|
| E2 EXTERNAL MOISTURE | <p>COMPLIANCE BY E2 ALTERNATIVE SOLUTIONS</p> <p>Thermosash Alpha Glazing System has no AS/NZS 4284 test report. Site water testing has been completed on previous projects. The skylight system is built within the floor diaphragm so there are no significant differential seismic movements. Structural adequacy is shown by Engineer's calculation.</p> <p>Compliance with E2 can be supported by in-service history on the projects Thermosash have completed using the Alpha Glazing system. Thermosash has been successfully installing this system for well over 15 years on projects across New Zealand - such as University of Canterbury RRSIC building ANZ Centre (Triangle Building), Christchurch Meridian Energy HQ, Wellington Lambton Square Plaza, Wellington TVNZ Building, Auckland Waitakere Civic Centre, Auckland Lumley Towers, Auckland ASB North Wharf, Auckland AUT Sir Paul Reeves Building Commercial Bay, Auckland and many more.</p> <p>If required by the Client's Peer Reviewer, Thermosash can complete QA/QC site water testing in accordance with the following:</p> <ul style="list-style-type: none"> AAMA 501.2 test - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems (for fixed elements). |
| F2 HAZARDOUS MATERIALS | <p>COMPLIANCE BY F2/AS1 NZS4223.3</p> <p>There are no hazardous materials except glass within our systems. Compliance with F2 Hazardous Materials for glass is shown by compliance with NZS4223.3 or specific design.</p> |
| F4 SAFETY FROM FALLING | <p>COMPLIANCE BY NZ/AS 1170.1</p> <p>Thermosash follows the safety in design intent on the architectural drawings and designs the doors/windows/curtainwall for C3 barrier loads where protecting a fall greater than 1 m (NZS/AS 1170.1 Table 3.3). Thermosash's responsibility is limited to the door/window/curtainwall and balustrading - where integrated into our package.</p> |
| G4 VENTILATION | <p>COMPLIANCE IF APPLICABLE</p> <p>In the event that the incorporation of an element into our facade system solution is necessary to adhere to Building Code G4 Ventilation, Thermosash will provide an engineered solution along with a comprehensive compliance pathway for approval.</p> |
| G7 NATURAL LIGHT | <p>COMPLIANCE IF APPLICABLE</p> <p>In the event that the incorporation of an element into our facade system solution is necessary to adhere to Building code G7 Natural Light, Thermosash will provide an engineered solution along with a comprehensive compliance pathway for approval.</p> |
| H1 ENERGY EFFICIENCY | <p>COMPLIANCE IF APPLICABLE</p> <p>In the event that our facade solution is required to comply with Building Code H1 Energy Efficiency, compliance will be shown by way of Engineer's report, using calculation methods contained in NZBC Acceptable Solution H1/AS1 or H1/AS2 or the modelling methods contained in NZBC Verification methods H1/VM1 or H1/VM2 and include test results attached to a compliance pathway submission, including a PS3 Construction Producer Statement for our product solution.</p> |

NOTE: THIS BROCHURE CONTAINS A SUMMARISED VERSION OF BUILDING PRODUCT INFORMATION REQUIREMENTS (BPIR) CLASS 2 DISCLOSURE INFORMATION - OUR COMPREHENSIVE DOCUMENTS CAN BE DOWNLOADED FROM:
[HTTPS://WWW.THERMOSASH.CO.NZ/DOWNLOADS-RESOURCES/BPIR-DOCUMENTS/](https://www.thermosash.co.nz/downloads-resources/bpir-documents/)



Spark (Vector) Arena, Auckland



B-Hive Smales Farm, Auckland



Lumley Tower, Auckland CBD



Auckland Museum "The Dome" and rooflights



Victoria University, The Hub



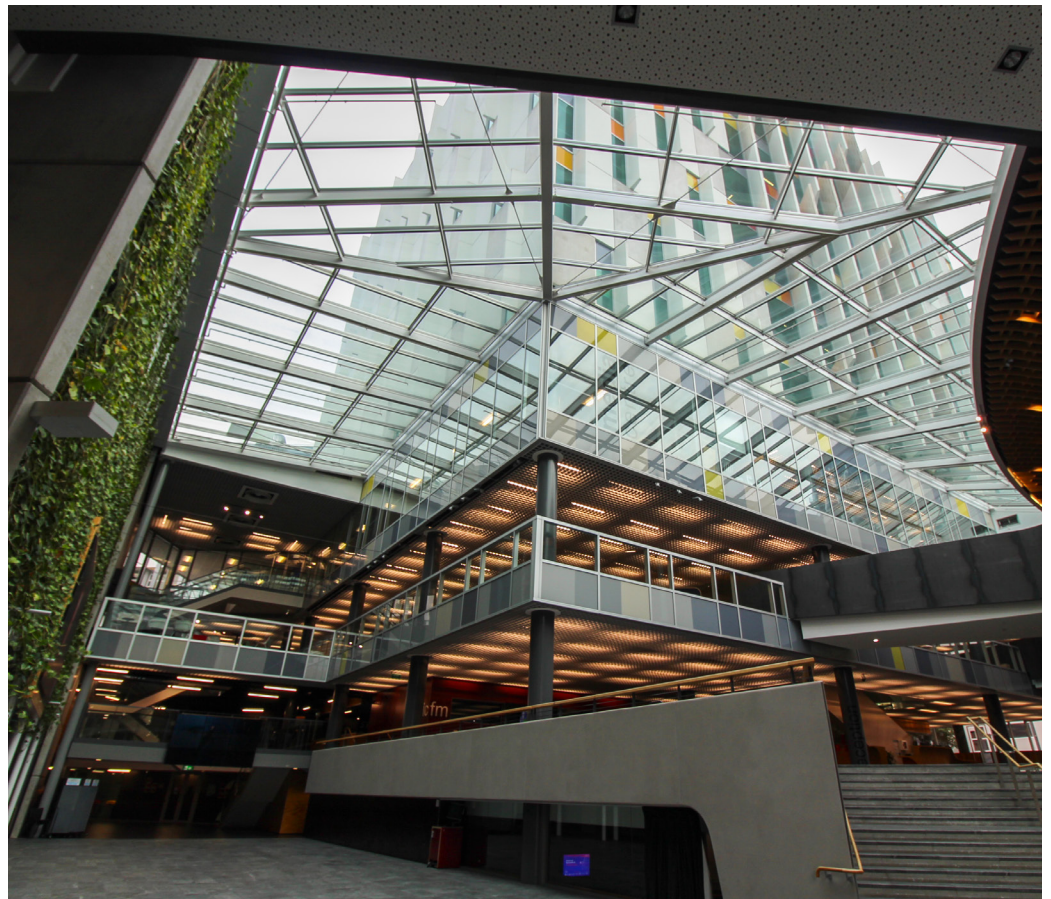
Commercial Bay, Auckland CBD



Toyota HQ, Palmerston North



Harvey Norman Centre, Lower Hutt



Auckland University of Technology (AUT) - Sir Paul Reeves Building

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Thermosash are members of:



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