

THERMOSASH

# PW400 Unitised

HIGH PERFORMANCE  
CURTAINWALL



**Thermosash**  
BUILDING ENVELOPE SOLUTIONS™

**Thermosash Commercial Ltd**

158 Central Park Drive, Henderson  
Auckland 0610, New Zealand

[www.thermosash.co.nz](http://www.thermosash.co.nz)



## Our Unitised Facades offer the benefits of local off-site fabrication, modern construction techniques, and near limitless design possibilities...

bringing your boldest architectural visions to life whilst delivering practical benefits such as speed of installation, reduced risk, 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. We have five decades of building envelope experience to bring to your table.

## 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.



**Middlemore Hospital**  
AUCKLAND



**Karori Library**  
WELLINGTON



**191 Queen St**  
AUCKLAND

# UNITISED CURTAINWALL PW400

The Thermosash PW400 is a four sided mechanically glazed engaged curtainwall, the horizontal transom elements and vertical mullion elements are expressed. The PW Series Suites have been extensively used and proven in New Zealand and our export markets since 1985.

The weathering design of these suites follows recognised international curtainwall design. All internal cavities of the system are designed to be pressure equalised (i.e. no pressure differential between the outside face and any internal cavity). This feature allows the water which penetrates the rainscreen to drain and maintain ventilation. The rear air seal is critical to the system's weathering performance as air infiltration acts as the medium which transports water through to the building's interior.



## PRODUCT SPECIFICATION

### MASTERSPEC

We recommend using Masterspec 4211TS Commercial Windows when specifying Thermosash PW400 Unitised Curtainwall.

### CAD DOWNLOADS

PW400 CAD downloads are available from our website:

<https://www.thermosash.co.nz/downloads-resources/cad-downloads/curtainwall-downloads/unitised-high-performance/pw400-downloads/>

## PRODUCT PERFORMANCE

### KEY DESIGN FEATURES

This engineered façade product is designed to accommodate:

- building movements -both vertical and horizontal (seismic)
- Allows for differential rates of thermal expansion and contraction
- Connection details to accommodate construction tolerances
- Structural member strengths comply with Code or project specification
- Glass design and it's integration with the glazing system to ensure glass warranties are complied with

### THERMAL PERFORMANCE

Our Unitised offering includes PW400 Unitised Thermal Break Suite; **PW400-TB160** - mullion size 160mm

The final performance of the curtainwall suite is subject to many variables, from size of individual panels, glass performance, introduction of transoms and integrated solar shading (where bracketing may cause a cold link passage) and spandrel depth (insulation). The glass specification is a significant contributor to the overall performance.

Our team of designers and engineers are able to review your project and advise around the best suite solution for your project's thermal performance requirements. Please contact us to discuss further.

### 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 specific 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

- Clause A1 Building Use Classification:
  - Housing, Communal residential, Communal non-residential, Commercial, Industrial and Ancillary
- Clause A3 Building Importance Levels from 1-5

### BUILDING TYPE

- High-rise
- Mid-rise
- Low-rise
- Specific design

### BUILDING LOCATION

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 PW400 suite 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

### MULLION SIZES

75mm / 100mm / 150mm / 200mm with the ability, where necessary, to structurally supplement the sections when the suite is exposed to high floor to floor spans or high wind zones, thus potentially reducing the need for additional primary or secondary structure to be provided by the Main Contractor.

### MAXIMUM SPANNING ABILITY

The spanning ability will vary depending on the structural system and environmental loads (e.g. wind). Thermosash specifically engineers the best suite options to meet project requirements. Our suites are recognized as having the largest spanning systems on the market due to our specific engineering capability and the customised nature of the work we complete.

### INTEGRATED ELEMENTS

- A large variety of materials can be integrated into a unitised panel, including:
  - different glass types
  - metals
  - terracotta tiles
  - large format porcelain
  - glass reinforced concrete (GRC)
- brackets to receive externally mounted fins, louvres, Venetians, custom feature elements, or building signage
- The PW400 can accommodate opening sashes suitable for highrise installations.

### PW400 UNITISED CAPABILITIES INCLUDE

- Curtainwall systems
- Seismic Systems
- Thermal Systems
- Twin Skin Systems
- Secondary acoustic glazing
- Shopfront

## 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, 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 system 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 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).

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.

**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
<p><b>B1</b> <b>STRUCTURE</b></p>	<p><b>COMPLIANCE BY B1/VM1</b> Compliance with B1 is shown by way of engineering calculations and/or testing, and reports are attached to the compliance pathway submission.</p>
<p><b>B2</b> <b>DURABILITY</b></p>	<p><b>ACCEPTABLE SOLUTIONS B2/AS1</b> There are no Acceptable Solutions available for aluminium and steel, and protection is provided through surface treatment in accordance with:</p> <ul style="list-style-type: none"> <li>• AS/NZS 2312:2014 - Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings.</li> <li>• AAMA 2605-05 - Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels.</li> <li>• AS 37155:2002 - Metal finishing thermoset powder coatings for architectural applications of aluminium and aluminium alloys.</li> <li>• AS 1231:2000 - Aluminium and aluminium alloys - anodic oxidation coatings.</li> <li>• WAZN - Specification for powder coatings on architectural aluminium products.</li> <li>• SNZ TS 3404:2018 - Durability requirements for steel structures and components</li> </ul> <p><b>COMPLIANCE BY B2/VM1</b> 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>
<p><b>C3</b> <b>FIRE</b> affecting areas beyond the source</p>	<p><b>COMPLIANCE IF APPLICABLE</b> In the event that the incorporation of an element into our facade 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
<b>E2 EXTERNAL MOISTURE</b>	<p><b>COMPLIANCE BY E2 ALTERNATIVE SOLUTIONS</b></p> <p>Compliance of E2 Alternative solution testing to AS/NZS4284 and good practice detailing as shown by way of testing, and test results are attached to every compliance pathway submission. Any complex/high-risk details that arise will be checked specifically for weather tightness by our in-house Producer Statement Author following best practice design principles, making use of pressure-equalised drained cavities and specialist expertise and experience.</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"> <li>AAMA 501.2 test - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems (for fixed elements).</li> </ul>
<b>F2 HAZARDOUS MATERIALS</b>	<p><b>COMPLIANCE BY F2/AS1 NZS4223.3</b></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 (occasionally terracotta tiles or porcelain stone may be integrated).</p>
<b>F4 SAFETY FROM FALLING</b>	<p><b>COMPLIANCE BY NZ/AS 1170.1</b></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>
<b>G4 VENTILATIONS</b>	<p><b>COMPLIANCE IF APPLICABLE</b></p> <p>While we do not assume responsibility for fenestration and ventilation design within buildings, we offer fenestration advice and have the capacity to customize our products to aid in achieving compliance with Clause G4 standards if applicable, by providing an engineered solution along with a comprehensive compliance pathway for approval.</p>
<b>G7 NATURAL LIGHT</b>	<p><b>COMPLIANCE IF APPLICABLE</b></p> <p>While we do not assume responsibility for fenestration and lighting design within buildings, Thermosash will provide an engineered solution along with a comprehensive compliance pathway for approval if compliance pathway submission, including a PS3 Construction Producer Statement for our product solution.</p>
<b>H1 ENERGY EFFICIENCY</b>	<p><b>COMPLIANCE IF APPLICABLE</b></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, Acceptable Solution H1/AS2 or Verification Method H1/VM2 where applicable, or an alternative solution should this be necessary, and include test results attached to a compliance pathway submission.</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/)



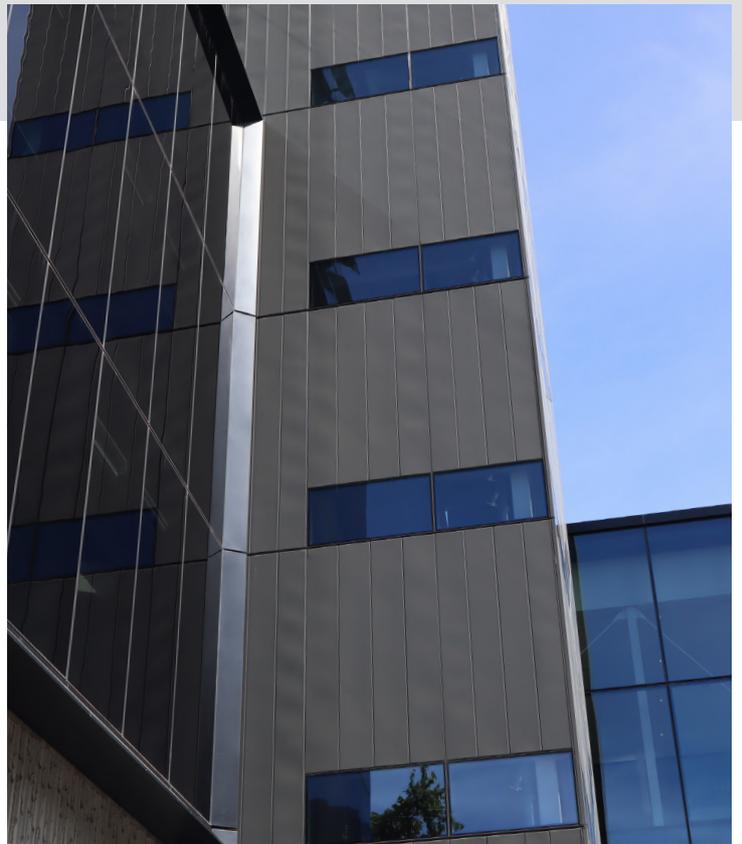
Waste Management NZ, Auckland - PW400 Curtainwall



Holiday Inn Remarkables Park, Queenstown - PW400 Unitised Curtainwall Suite to the ground floor



Quest Hotel, Takapuna - PW400 Unitised Curtainwall Suite to the ground floor



UOA Engineering B405 - PW400 fixed double glazed punch windows



Spark HQ, Christchurch - internal PW400 skin with an external PW1000 skin



UOA Parkwest 507 - PW400 Suite to wind lobbies



UOA Thomas Building - PW400 Unitised double glazed curtainwall with external skin structural glass louvres



The Crossing, Quest Hotel, Auckland - PW400 Unitised Curtainwall



Waitakere Civic Centre, Auckland - PW400 Unitised Curtainwall installed as secondary glazing to Civic building and primary curtainwall to Admin block.



104 Victoria Str, Christchurch - PW400 Unitised Curtainwall with integrated vertical fins



Warren and Mahoney Offices, Christchurch - PW400 Unitised Curtainwall with channel glazing & opening sashes to ground floor



Showplace, Christchurch - PW400 Unitised Curtainwall with integrated solar shading

# THERMOSASH CURTAINWALL PRODUCT RANGE

THERMOSASH SYSTEM	UNITISED	COMMERCIAL	HIGHRISE	LOWRISE	THERMAL BROKEN	THERMAL EFFICIENT	SEISMIC OPTIONAL	ACOUSTIC OPTIONAL	TWINSKIN OPTIONAL	SECONDARY GLAZING / JOCKEY SASH OPTIONAL
<b>UNITISED</b>										
PW1000	•	•	•	•		•	•	•	•	•
PW1000 - TB200	•	•	•	•	•		•	•	•	•
PW1000 - TB160	•	•	•	•	•		•	•	•	•
PW800	•	•	•	•			•	•	•	•
PW600	•	•	•	•			•	•	•	•
<b>PW400</b>	•	•	•	•			•	•	•	•
<b>PW400 - TB160</b>	•	•	•	•	•		•	•	•	•
PW100	•	•		•			•	•	•	•
PW80	•	•		•			•	•	•	•
PW60	•	•		•			•	•	•	•
PW40	•	•		•			•	•	•	•
DELTA	•	•	•	•			•	•	•	•
DELTA - TB50	•	•	•	•	•		•	•	•	•
<b>STICKWALL</b>										
CW800		•		•		•	•	•	•	•
CW600		•		•		•	•	•	•	•
CW400		•		•		•	•	•	•	•
CW40		•		•		•	•	•	•	•

# OUR BRANCHES

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Lower Hutt 5045 New Zealand  
04 939 4500

## LEVIN

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Levin 5571, New Zealand  
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Lower Hutt 5045 New Zealand  
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## CHRISTCHURCH

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Thermosash are members of:



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