

**CUTTING
CORNERS HAS
A COST.**

BEYOND APPEARANCES



The Importance of Base Metal Thickness
and Zinc Coating Protection in Steel
Performance and Compliance

EDITION 2

RONDO®

Beyond Appearances: The Importance of Base Metal Thickness and Zinc Protection in Steel Performance and Compliance

New Zealand's construction industry relies on building products that are safe, compliant, and engineered for long-term performance. Yet the continuation of our 24-month investigation and the latest independent testing reveals that non-compliant imported steel products from China continue to enter the market. Many of these products we tested have base metal thicknesses (BMT) below their stated values and outside the AS/NZS 4600 -required 95% tolerance. Compounding this, several imports feature significantly lower zinc coating levels than Rondo products, further increasing their risk of corrosion and the resulting impacts on structural adequacy, fire performance, and waterproofing.

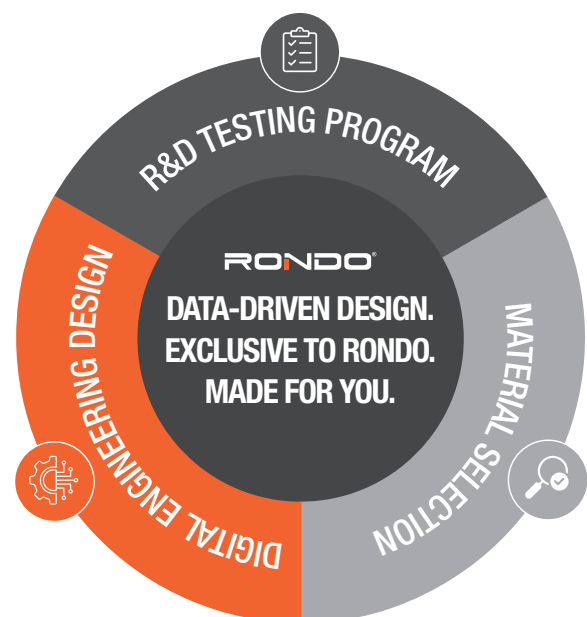
Our ongoing testing continues to reveal imported products that do not meet code requirements, even from suppliers who previously claimed full compliance following our previous Cutting Corners releases. This reinforces why genuine, verified compliance is critical for contractors, builders, certifiers, architects, and engineers who depend on reliable systems to safeguard their projects and reputation.

In this edition, we cover:

- **Our latest independent test results showing continued non-compliance with the NZBC**, where imported steel products have not met the AS/NZS 4600 requirement that actual base metal thickness (BMT) must be at least 95% of the specified value.
- **Salt spray testing performed on imported steel products** to show how zinc coating quality affects corrosion resistance and what this means for durability, structural adequacy, fire performance, and waterproofing.
- **Real-world failures in newly built homes**, where red rust appeared through finished walls due to imported corner beads with insufficient zinc protection.
- **How there is no equivalent to Rondo**, as we have an unmatched research, testing, and development program that is delivering data insights used in the design of our high-performance, compliant systems.

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Backed by testing and transparent results, Rondo continues to lead the industry. We don't just identify non-compliance, we invest deeply in research, development, and engineering to lift the standard for high-performing, fully compliant steel framing systems.



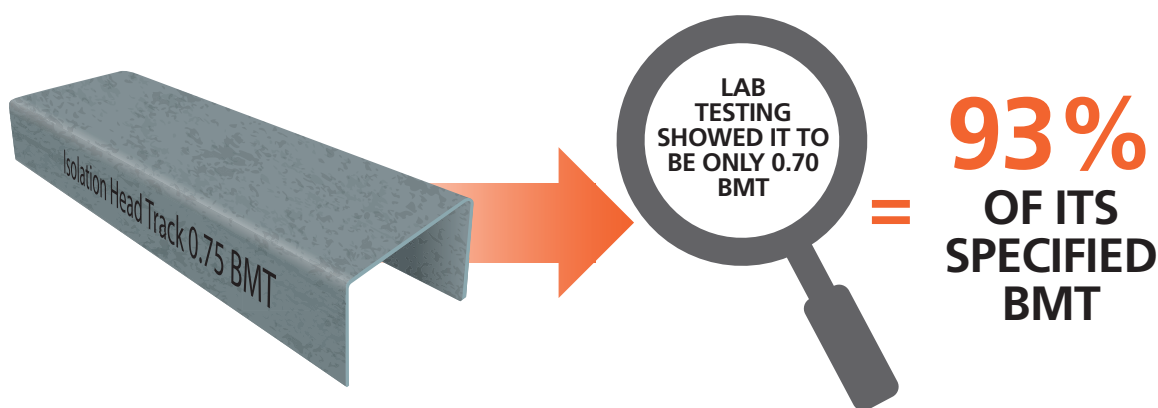
1 Continued non-compliance with NZBC and New Zealand Standards

In our First Edition released last year, independent testing uncovered that several imported steel wall and ceiling products from China were non-compliant of NZBC compliance, by failing to meet the AS/NZS 4600 requirement for cold-formed steel to be at least 95% of its specified base metal thickness (BMT).

Ongoing independent testing has revealed that several imported products still fail to meet the 95% BMT code requirement, with our test results contradicting how the products are marked, specified and advertised.

Because base metal thickness is concealed beneath the zinc coating, it cannot be verified through visual inspection or routine on-site measurement. Accurate determination requires laboratory testing, including removal of the zinc coating to measure the base steel. As a result, the industry may rely on thickness markings and product information provided by importers. Independent laboratory testing has identified discrepancies on some imported products exceeding 5% between thickness markings and measured results, which is non-compliant to NZBC.

AS/NZS 4600 requires the actual BMT to be at least 95% of the specified BMT (as referenced by NZBC compliance pathways)



As an example, an isolation head track that is promoted as being a part of compliance-focused solution, was tested at only 93% of its specified BMT, below the New Zealand Standards requirement. Although marked as 0.75 BMT, the tested Track measured just 0.70 BMT, revealing a clear difference between its stated and actual thickness.

The following test results reinforce the importance of choosing trusted, tested, and fully compliant steel framing products

Product	Specified BMT	Tested BMT (mm)	Variance	AS/NZS 4600 Compliance tested sample product
64mm Track	0.55	0.47	85%	✗
Furring Channel	0.50	0.46	92%	✗
64mm Stud	0.55	0.47	85%	✗
16mm Ceiling Batten	0.50	0.46	92%	✗
64mm Stud	0.50	0.47	94%	✗
Top Cross Rail	0.75	0.68	91%	✗
Isolation Track	0.75	0.70	93%	✗

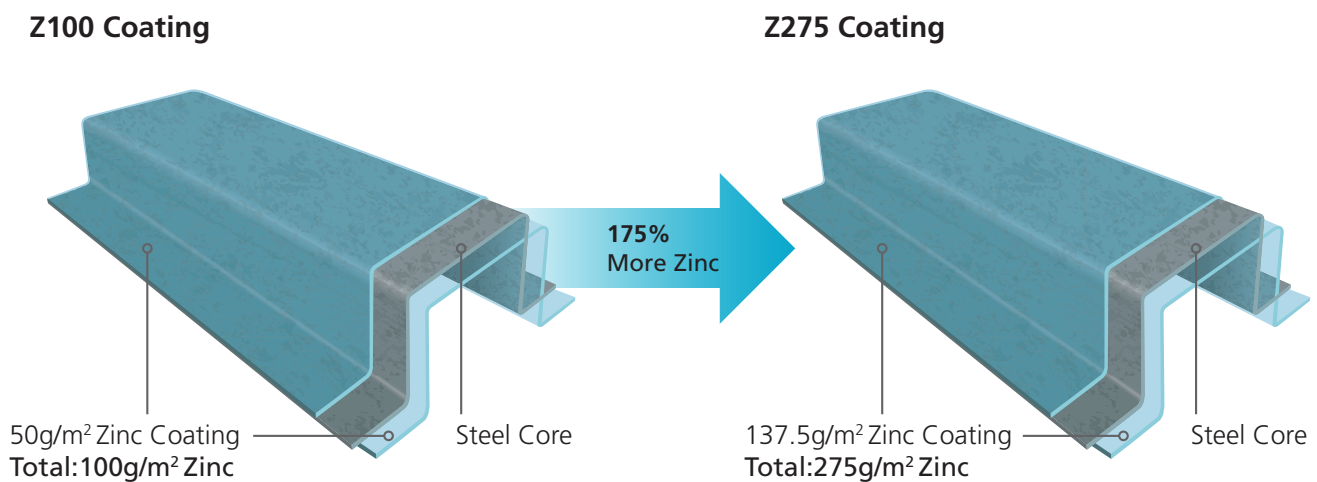
2

Appropriate Zinc Coatings for long-lasting protection

Zinc coatings are vital to ensuring steel durability, they provide a sacrificial shield that guards against corrosion and extends the product's lifespan. Unfortunately, some imported products have lower zinc coatings to cut costs, leading to faster corrosion and shorter product life.

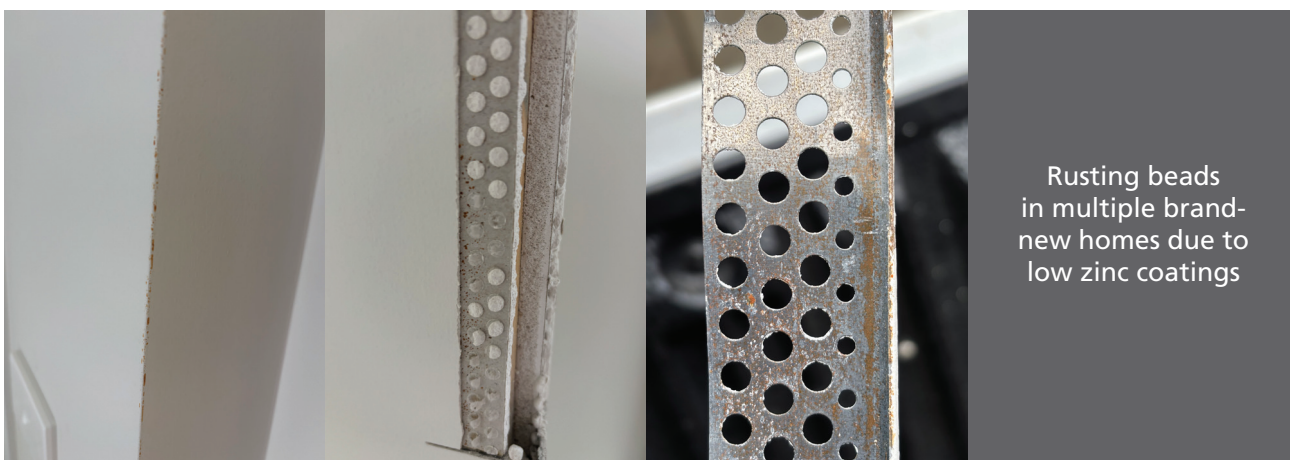
Over a 24-month investigation, majority of the imported steel products we tested had a Z100 zinc coating, while Rondo steel products are typically supplied as Z275.

Z275 contains 175 g/m² more zinc than Z100, equating to **175% greater zinc protection**. This additional coating thickness provides substantially enhanced corrosion resistance, particularly in environments subject to moisture and condensation.



2.1 Rusting Beads in brand new homes causing rework costs

We were recently contacted about multiple new homes where imported corner beads were rusting through finished walls. Our testing found the products had a thin Z70 zinc coating, and in some areas, the coating had been completely removed during manufacture, leaving no protection against corrosion across parts of the bead.

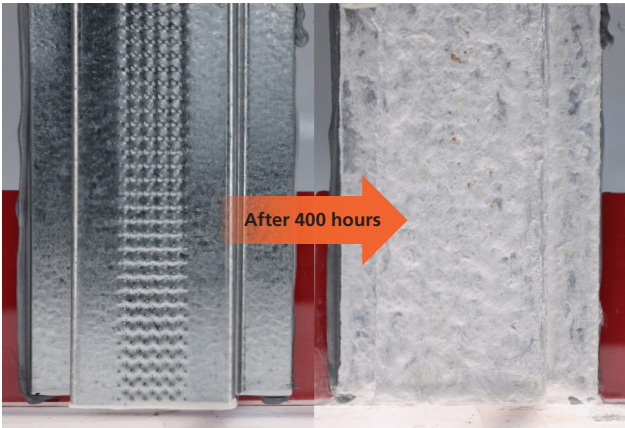


2.2 The performance implications of low zinc coated products

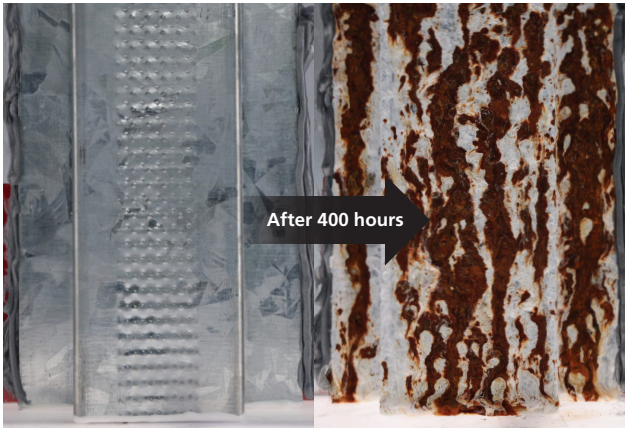
We recently completed Accelerated Corrosive Environmental Testing at an independent laboratory. In this test, a continuous salt mist was sprayed onto both Rondo and imported steel components, with images captured at consistent intervals.

Even before testing commenced, the imported steel samples showed visible surface defects. By 200 hours, red rust had already formed on the imported steel due to coating failure, and by 400 hours significant corrosion was evident. In contrast, the Rondo samples displayed no visible red rust over the same testing period.

Rondo Top Hat

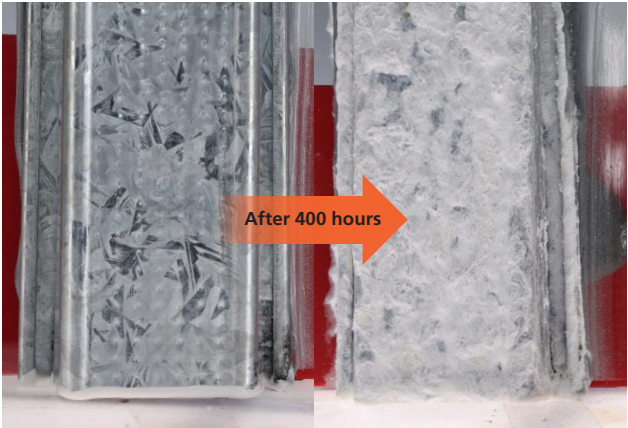


Import Top Hat

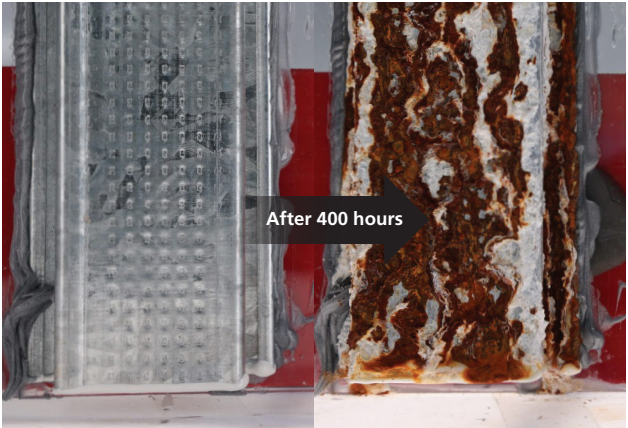


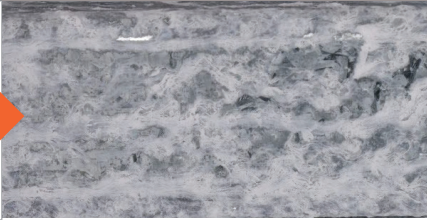
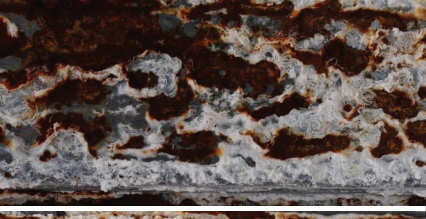
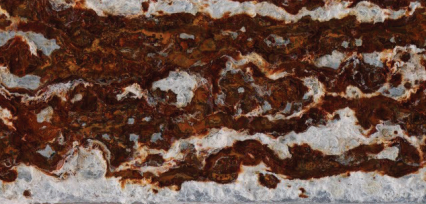
Hours	Rondo Top Hat	Import Top Hat
100 hours		
200 hours		
300 hours		
400 hours		

Rondo Furring Channel

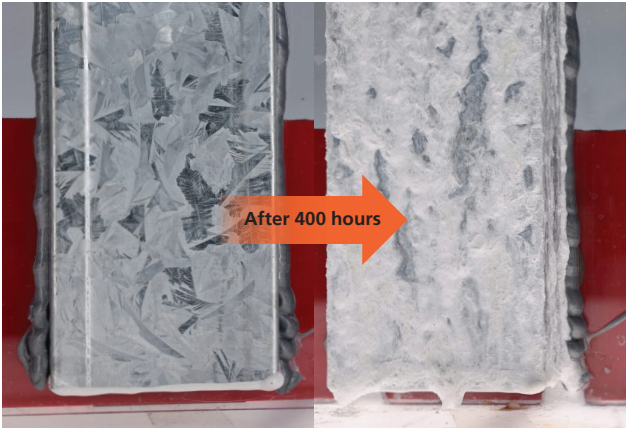


Import Furring Channel



Hours	Rondo Furring Channel	Import Furring Channel
100 hours		
200 hours		
300 hours		
400 hours		

Rondo 64mm Stud



Import 64mm Stud



Hours	Rondo 64mm Stud	Import 64mm Stud
100 hours		
200 hours		
300 hours		
400 hours		

2.3 What does this mean for performance of low zinc-coated products?

The results of the accelerated corrosion testing are unmistakable: low zinc-coated Top Hats corrode significantly faster, and once the protective coating fails, the underlying steel deteriorates rapidly. This early breakdown has major implications for façade systems, where steel Top Hats are critical to structural performance, fire safety, and weatherproofing.

Below is a summary of how coating failure and corrosion in Top Hats can impact real building performance:

Coating failure of Top Hats could lead to...



Structural Inadequacy Issues

- Reduce load capacity
- Loss of section
- Weaker Connections
- Façade Instability



Fire Performance Risks

- Earlier structure failure in fire
- Reduce fixing strength
- Increased risk of cladding detachment



Waterproofing Issues

- Movement
- Sealant Failure
- Water Ingress
- Mould
- Long-term building damage

a) Structural Inadequacy Issues: Why Rusted Top Hats Can No Longer Support Your Façade

Red rust can expand up to 10 times the volume of steel, so when corrosion begins, it progressively eats away at the material while also causing surface expansion.

As corrosion progresses, it results in:

- Reduced steel thickness, lowering the load-carrying capacity
- Weakened connections, particularly fasteners fixed into the corroding Top Hat
- Distortion or buckling, as volumetric expansion pushes the steel out of shape

In façade systems where Top Hats support cladding, these effects can cause:

- Sagging or displacement of cladding
- Premature fatigue and cracking
- Failure to meet design wind-pressure or structural performance requirements

Over time, corroded steel can no longer perform the way it was designed, compromising the stability of the entire façade assembly.



b) Fire Performance Risks: How Corroded Top Hats Fail Faster Under Fire Conditions

Corrosion not only weakens steel in normal conditions, it also significantly reduces its performance during a fire.

Steel naturally loses strength when exposed to high temperatures. If corrosion has already reduced the steel's cross-section:

- The material reaches its failure point much sooner in a fire
- Deformation occurs faster, increasing the likelihood of cladding collapse or detachment
- The sub-framing may no longer be able to maintain façade integrity long enough to meet fire performance expectations

Corrosion also degrades fastener threads and reduces pull-out strength. During a fire, materials expand and loads shift, meaning fixings must perform reliably. Rusted Top Hats compromise that reliability, increasing the risk of:

- Cladding panels falling away
- Fire spread pathways opening within the façade cavity
- Falling debris endangering occupants or emergency responders

Simply put, a weakened substrate dramatically undermines the fire performance of the entire façade system.



c) Waterproofing Failures: How Rusted Top Hats Can Lead to Leaks and Façade Damage

Corrosion also has significant implications for building envelope performance. As steel rusts and expands, it can cause:

- Bowing or distortion of the Top Hat
- Movement at junctions and fixings
- Cracking of cladding boards, joints, and sealants

Even small shifts in a façade system can compromise waterproofing membranes, flashings, or seal interfaces—creating new pathways for water to enter the structure.

These issues increase the likelihood of:

- Water ingress
- Moisture accumulation behind cladding
- Mould growth
- Long-term deterioration of insulation, sheathing, and framing
- Premature failure of the façade system

Water penetration is one of the most common and most expensive building defects. Premature corrosion of Top Hats magnifies the risks, which can lead to:

- Higher maintenance costs
- Increased insurance and liability exposure
- Remediation works that far exceed any initial cost savings from low zinc-coated imports



3

No equivalent to Rondo

While we've spent the past 24 months testing imported products, we've also heavily invested in our own R&D, engineering, and software development, because standing apart matters. We're focused on creating innovations that are uniquely Rondo and deliver real value to our customers.

This includes a more refined product range, elevated design capability, and Rondo-exclusive solutions created to give our customers a real performance edge.

Engineered Through Real Data

Our in-house testing facilities run around the clock, backed by research partnerships in high-seismic regions like New Zealand and Taiwan. This gives us deep insight into how our systems perform in real-world conditions—so every solution is proven where it matters most.

Materials Chosen for Maximum Performance

By testing every component, and complete systems including linings, our engineers understand exactly how each element affects performance. With this data, we specify the right materials for the right application to deliver superior strength and durability.

Intelligent Design, Powered by Rondo

All of our research feeds directly into our proprietary engineering software, built in-house for the unique properties of Rondo products. The result? Designs that are fully compliant, high-performing, and tailored to each project.

Why Choose Rondo Systems?

- Full compliance with NZBC and New Zealand Standards
- Guaranteed system performance as designed
- Extended warranty with our system guarantee

Always Advancing

Innovation isn't a project, it's our commitment. Our ongoing investment means Rondo systems will continue to set industry standards for performance, reliability, and safety.

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NEED FREE SPECIFIC ENGINEERED DESIGN?

- Rondo in house engineering design services offers optimum build efficiency
- Includes ceilings, partitions & openings, soffits and external framing for facades
- Designs address Wind, Gravity AND Seismic loads for overall solution
- Comprehensive detailed design provides continuity through consent, tender and construction process
- Can also easily facilitate PS1, construction monitoring and PS4 service if required by Council

- Fully compliant with NZBC utilising the following standards;
 - NZS 1170.5 Earthquake Actions
 - NZS 1170.2 Wind Actions
 - AS/NZS 2785 – Suspended Ceilings – Design and Installation
 - NZS 4219 – Seismic Performance of Engineering Systems in Buildings
 - AS/NZS 4600 – Cold-Formed Steel Structures

Early engagement allows accurate, detailed and compliant designs to ensure competitive pricing through tender – most cost effective method.

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