

CUTTING CORNERS HAS A COST.

15-MONTH INVESTIGATION INTO IMPORTED STEEL PRODUCTS

Alarming Findings of Non-Compliance, False Claims, Safety Risks and Quality Issues

Rondo conducted a 15-month investigation into imported steel wall and ceiling products. This involved six rounds of independent laboratory testing on steel products sourced from over five Australian suppliers importing from China.

Our investigation revealed several issues with these tested products, including non-compliance with Australian Standards and other requirements, poor quality, incorrect markings, and inadequate coating protection. These problems can compromise the safety, workmanship, and durability of buildings, especially in critical applications like ceilings and fire-rated walls.

Since steel systems are often concealed by plasterboard, it can be challenging to identify the specific steel products used. This report highlights the need to assess and verify the compliance, quality, and durability of steel components prior to construction.

KEY FINDINGS OF TESTED IMPORTED STEEL WALL & CEILING PRODUCTS:

Over the coming weeks we will be releasing findings from our investigation. These findings relate to the more than five suppliers that we investigated covering the following products: Steel Stud, Wall Track, Deflection Head Track, Furring Channel, Top Hats and angles.

1.	Base Metal Thickness	• Non-Compliance with AS/NZS 4600 Light Gauge Steel Design Standard • Incorrect Base Metal Thickness Markings
2.	Coatings	• Failing to meet the coating protection recommended in AS/NZS 2785:2020 Suspended Ceiling Standards • Low Zinc Coating impacting Corrosion Protection
3.	Comparison to Rondo	• Equivalency to Rondo Claims
4.	Fire Compliance	• No evidence of Fire Compliance Testing • Non-Compatible with Knauf and CSR Fire-Rated Systems

SERIES 1: Base Metal Thickness

Our first findings release focuses on the steel product's Base Metal Thickness (BMT) which refers to the thickness of the steel material before any coatings or treatments are applied. This measurement determines the strength, structural adequacy and suitability of the steel for specific applications.

Non-Compliance with AS/NZS 4600 Light Gauge Steel Design Standard

Some imported wall and ceiling products that we investigated failed to meet AS/NZS 4600 standards, which require cold-formed steel to be at least 95% of the designed base metal thickness. Our testing and an importer's own published test data revealed some imported steel wall and ceiling components ranged between 85% to 94% of their specified Base Metal Thickness (BMT).

Incorrect Base Metal Thickness Markings

Some imported steel products were labelled as 0.50 BMT, but our testing showed that the stud and track components were actually 0.46-0.47 BMT and the furring channels were 0.45-0.46 BMT. Additionally, one importer publishes a product catalogue which lists a base metal thickness for steel stud as 0.50 BMT and track as 0.55 BMT, however, the same importer's own test data reveals the true BMT to be 0.468 BMT and 0.484 BMT, respectively.

Non-Compliance with to AS/NZS 4600 Light Gauge Steel Design Standard

To comply with AS/NZS 4600, designers of cold-formed steel structures must adhere to the specifications outlined in clause 1.5.1.5 'Acceptance of Steels' of the AS/NZS 4600, which requires that the uncoated minimum steel thickness at any point in the cold-formed product, as delivered to the job site, be at least 95% of the thickness used in its design.

Our investigation revealed a concerning issue with some of the tested imported steel products that were marked as 0.50 BMT but the steel studs had actual measurements ranging between 0.46- 0.47 BMT and furring channels 0.45-0.46 BMT —meaning the BMT was 92-94% and 90-92% respectively of the specified thickness. Furthermore, some steel tracks marked 0.55 BMT showed test results of only 0.47-0.48 BMT, with only 85-87% of the specified BMT.

Consequently, these components would be non-compliant if designers use 0.50 BMT or 0.55 BMT to calculate the load capacities of wall or ceiling systems. This is particularly troubling when it comes to safety-critical fire-rated walls, external walls and ceiling systems.

Test results of some of the wall and ceiling components we tested:

Product	Importer's Specified BMT	Tested imported steel product BMT	AS/NZS 4600 requirement	Test result
64mm Stud	0.50	0.46	95%	94%
64mm Stud	0.55	0.47	95%	85%
64mm Track	0.50	0.47	95%	94%
64mm Track	0.55	0.47	95%	85%
64mm Deflection Head Track	0.50	0.46	95%	92%
64mm Deflection Head Track	0.55	0.51	95%	93%
28mm Furring Channel	0.50	0.45	95%	90%
28mm Furring Channel	0.50	0.46	95%	92%

Furthermore, a contractor received a Rondo Installation Guide from an importer’s reseller for installing some of the tested imported steel products. Rondo's technical literature is designed exclusively for use with Rondo products, as our engineers' calculations are based on detailed testing, tolerances, and performance specific to Rondo steel products, which significantly differ from those of the tested imported steel products. This situation highlights how using our technical data with non-Rondo products can lead to non-compliant design and installation outcomes as our wall heights and load tables have been developed using our specified BMT.

Base Metal Thickness Markings:

During our investigations, some of the imported steel products were marked as 0.50 BMT, yet our testing revealed that some stud and track components were instead 0.46-0.47 BMT and the furring channels were all 0.45-0.46 BMT.

Our investigation also found one importer’s product catalogue advertising steel stud as 0.50 BMT and track as 0.55 BMT, yet their own publicly available test data indicates the actual base metal thickness to be 0.468 BMT and 0.484 BMT, respectively. Customers might base their purchasing decisions on the advertised BMT figures, assuming they are getting stronger and more durable wall and ceiling components than they are.

Possible implications of reduced Base Metal Thickness (BMT):

1

Structural Integrity

Given the structural calculations are based on the labelled BMT, where the BMT is lower than specified this may impact the structural calculations causing them to be inaccurate. This discrepancy may jeopardize the safety and stability of walls and ceilings within the home.

2

Non-compliant Installation

As noted earlier in this report, installations using a product with less than 95% of the designed BMT do not comply with AS/NZS 4600 standards. This non-compliance may lead to legal and/or safety issues.

3

Incorrect Cost Comparisons

Customers expect to pay for a certain quality and thickness of material. If the actual BMT is less than advertised and NCC tolerance (95% of specified thickness), customers are paying for a standard of product below their expectations, which may drive a misrepresented cost comparison.

4

Trust and Reputation

Discrepancies between the specified and actual BMT may erode trust among stakeholders. Failing to meet project specifications may have reputational damage of the involved companies and can impact future business opportunities.

3

SERIES 2: Zinc Coatings

Zinc coatings play a pivotal role in safeguarding the steel against corrosion, as they act as a sacrificial barrier to ensure a longer-lasting product. In some cases, importers may source steel from overseas with a thinner zinc coating as a way of reducing costs, which impacts the protection against corrosion and deterioration of the steel.

Failing to meet recommendations in AS/NZS 2785:2020 Suspended Ceiling Standards:

All the imported furring channels we tested showed a zinc coating of Z100, while AS/NZS 2785:2020 recommends that a minimum coating of Z180 should be used for internal ceilings greater than 300m from breaking surf and a minimum of Z275 should be used for external ceilings more than 1km from salt water.

Limited Rust Protection

Our testing, along with data published by a major importer, revealed the zinc coating mass for marked 0.50-0.55 BMT steel studs, tracks, and furring channels ranged between 85 g/m² to 122 g/m² and Deflection Head Tracks marked 1.15 BMT, typically used externally, were 171-179g/m². Rondo understands the importance of zinc coatings to properly protect steel from rusting and offers rust protection of 275 g/m² for the same components.

Failing to meet recommendations in AS/NZS 2785:2020 Suspended Ceiling Standards:

The Australian Standards for Suspended Ceilings AS2785:2020 recommend in clause F.4 that steel coating protection for all ceilings inside the building envelope that are more than 300m from breaking surf should be a minimum of Z180, and for ceilings outside the building envelope, a minimum steel coating of Z275 should be used in areas more than 1km from salt water.

Our testing program of various steel products from different importers showed a common trend where the Furring Channels were below the recommended zinc coatings outlined in AS2785:2020. Tested Furring Channels ranged between Z100-Z140. As the zinc coating sacrifices itself to protect the steel, these tested imported steel products have less protection to corrosion than Rondo steel furring channels which have a Z275 coating.

Tested Furring Channels had zinc coatings of Z100-Z140, falling short of the recommendations outlined in AS/NZS 2785:2020 Suspended Ceiling Standards.

Low Zinc Coating impacting Corrosion Protection

The most common sign of steel deterioration is rust, and no one wants rust in their building. Deterioration depends on variables such as the environment and the product properties, which includes the steel's zinc coating.

Characteristics of wall and ceiling steel components such as the thickness of zinc coating are not always detectable by sight.

Our investigation found the zinc coating mass of a variety of 0.5-0.55 BMT steel stud and track products tested, had a range between 99-122 g/m² of zinc coating applied (sum of both sides), compared to Rondo's 275 g/m² for the same components. Additionally, in the components that Rondo tested, the heavy gauge deflection head tracks tested which are typically installed in external wall applications, only had a zinc coating of 171-179 g/m² applied compared to Rondo's 275 g/m² for the same components.

SERIES 3: Comparison to Rondo

Our investigation uncovered some communications on public platforms where local importers referred to their steel products as “equivalent” or the “same as” Rondo. This is despite differences in steel base metal thickness, zinc coating protection, shape, manufacturing tolerances, and the absence of Rondo's innovative features, such as hemmed edges on steel studs, as well structural ribbing and knurling for stiffening.

Equivalency to Rondo Claims:

Some communications claimed the products were equivalent to Rondo despite differences in steel base metal thickness, coating protection, shape, manufacturing tolerances, and the absence of Rondo's innovative features, such as hemmed edges on steel studs for added strength and safety.

To determine equivalency to Rondo, the following should be considered:

- Base Metal Thickness with Comprehensive Test Data
- Zinc coating steel protection for a long-lasting product
- Evidence of testing in fire-rated and acoustic plasterboard systems
- Tested for seismic performance compliance
- Steel stud with hemmed edges for added strength
- Structural ribbing on steel stud for added strength
- Structural knurl on steel stud for stiffening of component
- Compliance with AS/NZS 4600 using specified design thicknesses
- Meets AS/NZS 2785:2020 Suspended Ceiling Standards
- Recommended by Australian Plasterboard Manufacturers

SERIES 4: Fire Compliance

It is essential that steel products used in walls and ceilings with fire-rated requirements fully comply with the National Construction Code (NCC) Specification C2D9. This ensures that the materials meet the necessary safety standards for fire resistance and provide adequate protection in case of a fire.

No Evidence of Fire Compliance Testing:

Cold-formed steel framing requires that a FRL must comply with NCC Specification C2D9. We did not find any evidence during our investigation that fire tests had been carried out with imported steel components with plasterboard to code requirements.

Non-Compatible with Knauf and CSR Fire-Rated Systems

Both Knauf and CSR fire reports specify Rondo steel in their fire-tested systems to comply with NCC Specification C2D9. Their fire-tested systems are unique to Rondo product, with our investigation revealing differences in steel base metal thickness, shape, and manufacturing tolerances between Rondo and the imported products we tested.

No Evidence of Fire Compliance Testing:

We were unable to find any evidence that the importers we investigated had conducted fire compliance testing with plasterboard in accordance with NCC Specification C2D9 for fire-rated walls or ceilings. In some cases, the imported steel products relied on comparisons to the yield strength and ultimate strength of Rondo steel to claim equivalency. As detailed, there are numerous differences between Rondo and the imported steel products we tested, particularly in steel base metal thickness, which is critical for fire performance.

Non-compatibility with Knauf and CSR Fire-Rated Systems:

Knauf and CSR are leaders in the Australian plasterboard industry, as well as joint venture owners of Rondo. To ensure optimal performance in an integrated system with their plasterboard, Rondo collaborates with both companies in the research, testing and development of our products. This partnership aims to provide peace of mind and ensure optimal performance.

For fire compliance, Knauf and CSR used Rondo steel in their fire test reports. Our investigation into imported steel revealed some of the steel studs, tracks, and furring channels had differences in the base metal thickness compared to Rondo and the variations between the BMT of the same sized products, may indicate greater differences in their manufacturing tolerances. The variations revealed in the imported products we tested mean they are not equivalent to the Rondo steel used in Knauf and CSR fire-rated systems and are therefore non-compatible.

To ensure a compliant fire-rated system is being installed to prevent the possibility of reputational damage, harm and litigation, it is important to ensure Contractors are installing trusted brands with proven testing.

THE COST OF CUTTING CORNERS			
Implications for Builders		Implications for Apartment Owners	
Builders may assume that where Rondo steel has been specified for their project, it will be installed. However, contractors may install non-Rondo branded steel from imported steel suppliers and in some instances those products may not meet code requirements and may be lacking in quality and durability. Where this occurs, this could lead to costly rework, reputational damage, and potential legal consequences, especially if the products are used in safety-critical applications like ceilings and fire-rated walls.		Homeowners risk buying apartments constructed with inferior-quality steel, which may not have undergone adequate testing for structural integrity or fire resistance in the specified plasterboard system. Additionally, products may lack sufficient coating protection, leading to premature rusting. Consequently, homeowners may incur significant expenses to address issues that could have been avoided with the use of high-quality, durable steel.	
Implications for Contractors		Implications for Architects	
Contractors might install inferior steel products to cut costs, but either knowingly or unknowingly use non-compliant materials in critical applications. Failures in ceilings and fire-rated walls can severely damage a Contractor’s reputation and lead to expensive legal battles, and steel corrosion defects can result in costly reworks. Both situations are likely to outweigh any upfront cost savings from purchasing a lower-quality steel.		Architects may specify Rondo or an equivalent steel for a project, but contractors might install a product that is not in fact equivalent to Rondo’s quality. If failures in the products occur, architects could face legal consequences and reputational damage due to the use of non-compliant or non-equivalent steel products being installed.	

Please note: The information presented in the Cutting Corners Campaign is based on Rondo's investigation of imported steel products and is current as of 21st October 2024. This investigation involved six rounds of testing conducted at an independent laboratory on steel wall and ceiling products sourced from over five Australian suppliers importing from China. While Rondo has sought to ensure it investigated a broad sample size for the purposes of this campaign, the data and information in this article is not representative of every imported product in the Australian market. We encourage readers to conduct their own evaluation of steel products, including performance and code compliance, and not to rely on the information provided in this campaign when making purchasing decisions. If you have any questions, please contact us at rondo@rondo.com.au.



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