

## Greater Vigilance Needed on Imported Steel Quality



**The quality of steel imported into Australia can vary markedly. With structural steel usually utilised in 'safety critical' items, meeting the quality standards expected in Australia should not be negotiable according to Australian Steel Institute (ASI) national technical development manager Dr. Peter Key.**

"Overseas standards are not necessarily compatible with the performance requirements inherent in the quality level expected by developed nations like Australia and that presents significant risks for the unwary choosing steel purely on price," he said. "There are numerous reports, both real and anecdotal, of quality and potential safety issues from the use of sub-standard imported [steel](#)."

Key said there have been some very serious instances of fraud in documentation of overseas building materials and processes being misrepresented as meeting the relevant Australian Standards where they knowingly do not.

A commercial infrastructure development in Penrith NSW, for example, had to be completely rebuilt by a local steel fabricator due to the plethora of compliance issues with both the steel material and also the fabrication (welding). The irony was that the local steel fabricator lost out on the original contract.

“Many stakeholders in the Australian steel supply chain fear that our governments will not seriously address the issue of non-compliance of construction products until a building catastrophe threatens or takes lives. This has striking similarities in scenario to the recent situation with imported frozen berries,” said Key.

According to a recent report by the Australian Industry Group titled *The quest for a level playing field - the non-conforming building products dilemma*, over 95 per cent of respondents said they encountered non-conforming building products in the steel supply chain.

### **Trading troubles**

The proliferation of non-compliant building products is an international issue and one that Australia is becoming more exposed to as global supply chains exert greater influence in the local building and construction market.

Steel was recently found in a study conducted by the Construction Industry Institute in the United States to be that country’s most counterfeited building product, with structural bolts a close second.

“Typical of the plethora of issues to be addressed is one that has been on the radar for some time,” said Key. “And that is the chemical manipulation of steel composition to bypass trade barriers without due regard to any detrimental performance effects. This is particularly the case with product originating in [China](#).”

Recent reports from the UK show imported steel from China with elevated levels of boron, configured to attract better tariff treatment. Similar incidents have been reported in Europe and the USA, and Key said the ASI is aware of some general structural steels being imported into Australia alloyed with higher levels of boron.

Boron is a very powerful hardening agent typically used in the manufacture of high strength or high hardness quenched and tempered steels, including those manufactured in Australia to AS3597. It was reported as long ago as 1983 in the UK that small additions of boron could adversely influence the performance of the steel when subjected to welding. Boron has the ability to revert from a non-active form to an active form under the heat of welding.

The rules for the establishment of the preheat requirements for the welding of steels in Australia and New Zealand were established on boron-free steels. AS/NZS

1554.1:2014 has allowable limits on boron in structural steels to ensure the integrity of the preheating recommendations.

“Should fabricators have cause to weld steels containing boron in excess of these limits, then the advice of the steel manufacturer or supplier should be sought for the determination of appropriate preheat,” said Key. “This ruling does not however apply to specific products with higher boron content, such as quench and tempered steels, where steel manufacturers have well established recommendations for welding them.”

Europe now has legally mandated independent certification under the European Union’s CE marking compliance scheme. As Australian compliance regimes are not legally mandated, Key said a higher degree of vigilance by the local industry is in order.

### **Local regime responds**

“Up to quite recently, the lack of rigor covering the supply of structural steel has led to an unacceptable degree of unsuitable and often faulty steelwork for development projects in Australia, and therefore risk across the supply chain,” Key said. “There has been little independent testing of materials undertaken or onus on procurement or design professionals to take responsibility for enforcing materials specifications.”

“Exacerbating this issue, ASI engineering members are under constant pressure to accept non-compliant materials based on a lower price and often only with limited if any test results, bypassing the compliance and test certificate process.”

The peak body responsible for procurement and construction policy of the federal, state and territory governments, the Australasian Procurement and Construction Council (APCC) regards addressing the compliance issue as critical to reinforcing confidence and reliability in building and construction supply, recognising the lack of credible and accurate information available in Australia to assist all stakeholders involved in construction projects to verify construction product conformance and performance.

“In reality, the most pervasive regulation in Australia is the current [Work Health and Safety](#) (WHS) Act that mandates a ‘duty of care’ for many stakeholders in the supply chain. Specifically, the Safe Design of Structures Code of Practice which sits under the WHS ACT, defines a duty of care for named stakeholders such as importers, distributors, product manufacturers and engineers. This means everyone along the supply chain is vulnerable to litigation should a building failure occur,” Key warned.

The Australian steel industry has contributed to a tightening of the certification and marking provisions in local standards covering hollow and open steel sections and

certification provisions for steel plate and the establishment of third party accreditation programs like ACRS to independently test and certify product conformance of structural steel similar to the existing approach to reinforcing steel.

The ASI has advocated four key requirements:

- All steel is to have test certificates viewed by the engineer/building contractor and/or the project documented for steel is to be subject to a third party certification scheme.
- Welding programs are to be specified to the technical standard AS/NZS 1554 and paperwork is to be made available to show compliance for the engineer to inspect for critical welds.
- All structural bolts and nuts used in the design are to be supplied with basic test certificates and these are to be viewed by the engineer for critical applications.
- The fabricator is to demonstrate basic capability through a prequalification and accreditation process assessed by an independent body.

To this end, the ASI has underwritten development of the new Structural Steelwork Fabrication and Erection Code of Practice (COP) and compliance scheme for structural steelwork. Implicit in the COP and scheme framework is the concept of risk-based, fit-for-purpose categories of structures with steel fabricators certified to those categories.

“With fabricators in Australia certified to one of the risk-based categories, Australia has in effect a national prequalification scheme for fabricated steelwork,” explained Key. “This has the potential to result in significant cost savings to both fabricators and procurers avoiding the significant duplication of qualification effort in current tendering processes.”

Queensland-based Brezac Constructions became the first to be certified in early 2015 and a Toowoomba [waste](#) management facility recently became the first development project known to have been specified to one of the risk-based construction categories.

The COP is currently in the process of becoming the first Australian Standard for the fabrication and erection of Australian steelwork, AS/NZS5131. The Standard itself is currently under review and expected to be released early in 2016.