

# More care needed with chemically 'spiked' steels

**The ASI is urging local industry to take special care when working with imported steels that may contain elevated levels of alloying elements such as boron as concern over the issue has hit the radar again internationally.**

As recently as January, trade association UK Steel issued an alert that Chinese data showed its exported rebar contains small amounts of other elements to qualify the steel as an alloy which benefits from an export tax rebate. It said a "significant but unknown proportion" of Chinese rebar sold in the UK contains boron in excess of eight parts per million and that samples had been tested with boron at 30 parts per million. The UK's Welding Institute advised that rebar containing boron in excess of five parts per million requires different welding techniques.

The influx of some non-compliant or mislabelled steels further presses the need for constant vigilance on 'chemical spiking'. Video evidence cited in the UK industrial media over the past year showed unlabelled and potentially non-compliant bundles of imported rebar on the Liverpool docks and in transit on British roads. Similar incidents have been reported in other parts of Europe and the USA and the ASI is aware that some general structural steels are being imported into Australia alloyed with 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 AS 3597.

The issue was first aired in 1983 at a micro-alloying conference in London reporting the adverse influence that small additions of boron could have on weldability, including the ability of boron when in a non-active form to revert 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, but AS/NZS 1554.1:2014 has an allowable limit on boron in structural steels to ensure the integrity of the preheating recommendations.

Where material is imported, fabricators should specifically request additional verifiable documentation on the chemistry of the steel, which includes the boron content in the case where it is not shown on the certificates. Should fabricators have cause to weld steels containing boron in excess of the limit given in AS/NZS 1554.1:2014, then the advice of the steel manufacturer or supplier should be sought for the determination of appropriate preheat and welding procedures adjusted accordingly. This ruling however does not apply to the welding of quenched and tempered steels containing boron where steel manufacturers have well established recommendations for welding.

## On the beam *Continued from page 14*

**ASI member gains Gold Medal.** ASI member and most recently senior structural engineer at AECOM, Dr Geoff Taplin was awarded the 2014 John Connell Gold Medal, one of the structural engineering's highest accolades. John Connell made an outstanding contribution to structural engineering in Australia and exporting of Australian engineering skills. Chair of the Engineers Australia Structural College, **Karlie Collis** said Dr Taplin was recognised for his impressive career spanning engineering, consulting and academia, both nationally and internationally. "He has played a key role in developing a number of structural engineering standards and continues to play an important role in educating the next generation of structural engineers," Mrs Collis said.

"Through his extensive and distinguished career in both government and private sectors – particularly in the design, assessment and rehabilitation of bridges – he has worked on some of Australia's most iconic transport projects," AECOM Chief Executive for Australia and New Zealand, **Lara Poloni** said. He is a member of drafting groups for the Australian Bridge Code AS 5100. He has been a member of the Institution of Structural Engineers (IStructE) and the Institution of Civil Engineers for 30 years and was a founding member of the Victoria Regional Group of IStructE. Since retiring from full-time work in 2014 he lectures part-time at Swinburne University teaching a unit in the final year undergraduate and Masters Degree.



## NEXT ISSUE... JUNE 2015

## Shifting Steel and Tooling Up

The June 2015 issue of Steel Australia will focus on how steel is moved more efficiently and safely and recent workshop investments to improve steelwork accuracy and throughput. Transporting and handling of steel will cover the rollout of the Steel Industry Logistics Code of Practice, initiatives taken by members of the Steel Transport Safety Network, ASI members investing in logistics facilities and how smart steel supply strategies are streamlining project resourcing. We will also look at how steel fabricators are investing in more sophisticated CNC enabled machinery on the shop floor and distributors upgrading their steel processing capabilities.

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