

Technical Note

14 September, 2017

Explanation of requirement for sleepers claiming compliance to AS1604.1 H4

The formal requirement for 200x75mm sleepers to claim compliance with the requirements of AS1604.1 H4 are:

1. Penetration
 - a. Preservative penetrates all sapwood
 - b. Preservative penetrates not less than 10mm from any surface
2. Retention
 - a. The penetration zone (as described above) must have minimum retention (% mass/mass based on oven-dried wood mass) of
 - 0.630 for CCA (chemical number 01),
 - 0.890 for copper quat (EG MicroPro, chemical number 89) or
 - 0.416 for copper azole (EG Tan E, chemical number 58)

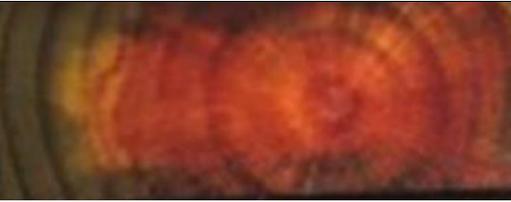
Demonstration of retention compliance is by taking timber samples and analyzing the penetration zone in a lab.

Demonstration of penetration is generally by using colourimetric indicators on matched samples to show on each piece:

1. Extent of sapwood vs heartwood
2. Penetration of chemical

Compliance under current Standards should strictly be met for every sample. In practice this is impossible for a natural product such as timber. Different producers will take different views on this; for landscape sleepers, which are usually marketed specifically for non-structural applications, producers may typically allow a higher proportion of non-compliant pieces than they may for structural treated products.

Below are matched samples showing penetration and heartwood/sapwood and assessment of compliance. For penetration, the indicator used shows up dark blue when copper is present; the heart/sap indicator shows red for heartwood, green for sapwood. Note that some bleeding of heart/sap indicator may sometimes occur (EG second sample below) – heartwood extends to and around a specific growth ring in the tree.

Compliance	Penetration	Heartwood/sapwood
Pass		
Pass		

Fail		
Fail		

Heartwood is difficult to penetrate with most preservative systems. Mechanical methods (EG incising – though the incisions must generally be to the full depth of the envelope required, IE 10mm) can facilitate this, as can steaming (the steaming process typically used on rounds ruptures cell walls, allowing penetration of heartwood). Some chemical systems can allow some heartwood penetration, but generally not to an extent where compliance can be claimed.

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