



# ALL CABLES ARE NOT THE SAME...

## Non Compliant Building Wires: Australian Rules

The Approved Cables Initiative (ACI) assisted the Australian Cablemaker's Association (ACA) to undertake testing on samples of Infinity brand low voltage building wire. The cable samples were obtained from the retail chain, Masters in Australia.

The cable tested was a 2.5mm<sup>2</sup> 2C+E Flat BW that is typically used in the power circuits of a domestic dwelling. The relevant Australian Standard for this cable is AS/NZS 5000.2 and this sets out the minimum performance criteria for use in Australia and New Zealand.

Testing has revealed that the cable failed to meet the minimum criteria defined in the Standard in three important areas as detailed below.

The ACI also sought to commission an independent laboratory (NATA accredited TÜV Rheinland Australia Pty Ltd) to repeat the tests which the ACA labs had found to be deficient. The findings of TÜV aligned very well with internal testing by the ACA.

The table below outlines the areas of non-conformance based on the test results:

**Manufacturer:** Infinity Cable

**Product:** 2.5mm<sup>2</sup> 2C+E Flat BW

### Non-compliances:

Aspect	Specification Requirement	Actual Result
Conductor Resistance	DC resistance	G/Y passed test by (+8%) Red passed test by (+6%) Black passed test by (+6%)
Insulation Ageing	Elongation after ageing	Too brittle to measure
Sheath Ageing	Elongation after ageing	Too brittle to measure

Analysing the impact from a safety perspective then the following considerations can be made:

The increased conductor resistance will, at a given load, produce a rise in conductor temperature due to the increased power dissipation within the conductor. This results in a 2-3°C increase in conductor temperature which although small it accelerates the aging of the cable by weakening the insulation and sheath of the cable over time.

The insulation and sheath deterioration after obligatory ageing found that the PVC material used for these critical protective layers is simply inadequate. ACA's testing, confirmed by the ACI, showed clearly that, after the ageing test, both insulation and sheath became so brittle that it fractured easily by bending the cable.

As a domestic building wire, typical installations are wall cavities and roof void. Once cables become brittle any physical disturbance could cause the materials to fracture and expose live conductors. Over time, enough movement to fracture the insulation and expose the live conductors presents an electrocution and fire hazard.

It is true to say that failures may not yet have been observed in the field because of the short period since the cable has been available but failures, and potential safety issues, are likely to occur in the near to medium term future and lives and property are at risk.